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Cost- and Demand-Induced Inflation

The inflationary process which has now been going on for a number of years has given rise to a controversy among economists concerning the origin of the continual rise in the general price level. One group holds that wage increases, because they exceed the increase in productivity per unit of labour, force the entrepreneurs to raise prices — i.e. that what we are witnessing is a cost-induced inflation. Representatives of this group buttress their thesis by pointing to statistical calculations which do indeed seem to show that in the recent past wages in a number of countries rose faster than productivity. A second group asserts that the inflation is "demand-induced"; we are confronted not with a "cost-push" but with a "demand-pull" inflation. They, too, can point to some empirical facts which seem to substantiate their view; in particular, they draw attention in the case of Great Britain to the existence (up to 1957) of what is called "over-full employment", i.e. the fact that job vacancies exceed job applications, which to them suggests that, if labour markets were truly competitive, wages would be even higher than they actually are, under collective bargaining. To lend further support to their thesis, they point to the fact that the hourly earnings of labour have (owing to the higher proportion of overtime) risen faster than the contractual rates of pay and that the ability of employers to pay these higher rates again seems to suggest that the inflation emanated from the demand side. According to these economists, excessive investments or budget deficits must be the culprit. No agreement has yet been reached between the two groups concerning the nature of the recent inflationary process.

We shall here try to establish theoretically what economic phenomena a cost-induced and demand-induced inflation, respectively, may be expected to produce; this procedure will provide us with criteria which can be used to decide whether the empirical evidence points to the one or the other type of inflation.

1. Conditions for Price Stability

We shall first summarise the conditions for preserving a stable price level in an economy in which there is an increase in productivity per unit of labour. We may assume, to begin with, that the increase in productivity is the same in all branches of economic activity, and also that there is no increase in the working population.

Let P_0 $(=1)$ be the price level, b the relative share of wage income and $1-b$ the relative share of non-wage income (profits including interest) in the value of output in the base period. Let W_1, E_1, and Q_1 represent, respectively, wage income, non-wage income and output per unit of labour (productivity) in period 1 as measured by an index equal to unity in the base period. Assume an elastic money supply. If then in period 1 prices are to remain the same as in the base period the following equation must hold

$$P_1 = P_0 = \frac{bW_1 + (1-b)\,E_1}{Q_1}$$

As a starting point let us take the case in which W_1 and E_1 both equal Q_1. This means that wages and profits rise at the same rate as productivity, the relative shares of wage income and non-wage income in the value of output are unchanged, and the price level remains the same as in the base period. It is this situation which seems generally to be regarded as the "ideal" one.

It must, however, be considered as subject to an important qualification. An increase in productivity per unit of labour is more often than not associated with a greater capital intensity of the productive process, i.e. more capital per unit of labour. If capital per unit of labour increased percentagewise more than productivity, the relative share of profits in the value of output would have to rise if the profit *rate* were to be maintained. In this case an increase in wages fully proportionate to that in productivity would — under the assumption of an elastic money supply — lead to higher prices unless entrepreneurs were content to let the profit *rate* fall. In other words, the increase in wages would here have to lag somewhat behind that in productivity if prices were to remain stable. Nevertheless we shall assume for purposes of the subsequent analysis that entrepreneurs are satisfied so long as the relative share of

profits in the value of output is maintained, which is the same as assuming that they always mark up the costs per unit of output by a constant percentage to cover interest and profit. This assumption, while it greatly simplifies the exposition, constitutes a considerable restriction on the generality of the analysis; and many conclusions must be qualified to allow for cases where the assumption would not be valid. It should, however, not be difficult for the reader to do this for himself; and I shall therefore not refer to this restriction at every point.

The condition on the monetary side for the "ideal" situation described above, is that aggregate demand shall increase at the same percentage rate as productivity per unit of labour, or, provided that the velocity of circulation is constant, that the money supply shall increase at this rate. We may suppose that the additional money enters the system via borrowing by the entrepreneurs from the banks *. The amount the entrepreneurs borrow must, however, be greater than the addition to the wage bill, if the price level and the relative share of profits in the value of output are to be maintained. We must therefore suppose that part of the borrowed money is used to finance investment over and above the additional working capital which is the counterpart of the higher wage bill.

We may now drop one of the assumptions made above viz., that productivity increases at the same rate in all branches of the economy. It is then the *average* increase in productivity which decides at what rate the money supply should be increased. The prices of the products of those industries in which the increase in productivity is more than average will fall, whereas the prices of the products of those industries in which the increase in productivity is less than average will rise, the general price level remaining stable. This process of relative changes in the price structure may, of course, temporarily be accompanied by exceptionally low profits or even losses in some branches of activity, and exceptionally high profits in others. Thus, if demand shifts in favour of the industries with a more than average increase in productivity, and away from those with a less than average increase, the prices of the products

* We here disregard the possibility that these additional investments might be made by the government instead of by business; nor do we consider cases in which that part of the additional money which is not required for wage payments enters the system via borrowing for consumption purposes, either by the government or by private individuals.

of the first group will not fall immediately, and exceptionally high profits will result, whereas the second group of industries will not be able to raise prices in line with the increase in their money costs. This group will shrink relatively while the first group expands, but the price level will remain unaffected, and the process of shrinking and expanding will finally draw relative prices back into line with relative costs.

The dropping of another of the assumptions made so far — that there is no increase in the labour force — requires, of course, as a condition for the price level to remain stable, that the proportional increase in the money supply should be greater than the proportional increase in the average productivity of labour. If q is the percentage increase in the productivity of the labour force already employed, and if the addition to the labour force is k per cent, then, assuming constant velocity of circulation, the money supply has to increase by an amount which is $q + k\ (1 + q)$ per cent of the money supply in the preceding period.

We have established as the two conditions for the maintenance of the price level that a) wage increases should reflect the current increase in average productivity, and b) the monetary authorities should expand the money supply (in the case of a stationary working population) at the same percentage rate as the increase in productivity. This goal, *so precisely defined*, is clearly impossible of achievement. Neither labour nor the monetary authorities can know how fast average productivity is currently rising, and it may easily happen that temporarily wage increases run ahead of (or lag behind) the increase in productivity, or that aggregate demand exceeds (or falls short of) what is required to keep the price level stable. The maintenance of rough stability in the price level is, however, not seriously endangered by this lack of perfect day-to-day adjustment, since prices do not react so promptly to changes in costs and in demand.

Thus, if wage increases exceed (or fall short of) increases in productivity only *temporarily*, it is profits that will be squeezed (or inflated) rather than prices that will rise (or fall). Only if wages persistently rise faster than productivity over a prolonged period will the result be *either* wage-induced inflation *or* unemployment; which it is depending on whether the monetary authorities are willing to let aggregate demand expand sufficiently or whether,

despite the danger of unemployment, they restrict the money supply.

If, on the other hand, wages do not rise more than in proportion to average productivity, but the monetary authorities let aggregate demand increase more than in proportion, the excess demand is likely to be satisfied at first from inventories; and, similarly, if the increase in demand temporarily falls short of the increase in productivity, the deficiency is likely to be reflected in inventory accumulation. Only if aggregate demand continually rises more (or less) than productivity will the price level rise (or fall).

In short, *temporary* deviations from the rule that wages and aggregate demand should expand *pari passu* with productivity need not interfere with the maintenance of a roughly stable price level.

2. Cost-Induced Inflation

Let us now consider the case of a wage-induced inflation under the assumption that the monetary authorities are prepared to provide the required increase in the money supply. We shall also assume that entrepreneurs succeed in raising the prices of their products in such a way that the relative share of their profits in the value of output is maintained. This means that in the formula

$$P_1 = \frac{bW_1 + (1 - b)\, E_1}{Q_1}$$

the expression $\frac{W_1}{Q_1}$ must be equal to the expression $\frac{E_1}{Q_1}$. P_1 will then be higher than P_0, provided that $\frac{W_1}{Q_1}$ is greater than unity. The price level will rise to $P_0 \cdot \frac{W_1}{Q_1}$, or simply $\frac{W_1}{Q_1}$, with the result that that part of the money-wage increase which is not based on an increase in productivity will, in real terms, be nullified.

In period 2, when wage earners again try to raise their wages, they will take account of the fact that the price level is now higher. We shall, therefore, assume that they demand money-wage increases which are made up of two components, a cost-of-living adjustment and another part intended to raise the real wage.

The wage level in period 2 will then rise, on account of the increase in the price level in period 1, to $\frac{W_1}{Q_1} \cdot W_1$ and this value will be multiplied by another factor W_2 on account of the demand for an increase in the real wage; so that the money wage rises on the whole to $W_2 \cdot \frac{W_1}{Q_1} \cdot W_1$. The price level in period 2 will consequently be $\frac{W_2}{Q_2} \cdot \frac{W_1}{Q_1} \cdot W_1$, where Q_2 is the index of productivity in period 2 on the base $Q_1 = 1$. Even if $\frac{W_2}{Q_2}$ equals unity, the price level in period 2 still rises to $\frac{W_1}{Q_1} \cdot W_1$ as compared with $\frac{W_1}{Q_1}$ in period 1; i.e. even if in period 2 the new wage increase (excluding the cost-of-living adjustment) no more than corresponds to the increase in productivity, the cost-of-living adjustment necessitated by the price rise in the previous period will lead to a new price rise in the current period.

A numerical example may make this double process of wage raising clearer. If in period 1 a wage increase of 20 per cent is granted (so that W_1 is 1.2), and if productivity rises by 10 per cent ($Q_1 = 1.1$.), the price level will rise to $\frac{1.2}{1.1} = 1.09$. In period 2 wage earners ask for an adjustment of their money wages to this higher price level, and this brings money wages up to $1.2 \times \frac{1.2}{1.1}$ $(= W_1 \cdot \frac{W_1}{Q_1}) = 1.31$. In addition, they ask for an increase intended to raise their *real* wages, say, by 20 per cent ($W_2 = 1.2$), so that their money wages rise on the whole to 1.31×1.2 $(= W_1 \cdot \frac{W_1}{Q_1} \cdot W_2 = 1.57$. Assuming that productivity again rises by 10 per cent ($Q_2 = 1.1$), the price level will rise to 1.43 $(= W_1 \cdot \frac{W_1}{Q_1} \cdot \frac{W_2}{Q_2})$.

There are thus two factors which determine the pace of a cost-induced inflation in the period following a new wage round. The first one is the cost-of-living adjustment, which depends on the ratio

of the preceding wage increase to the preceding productivity increase. The second is the ratio of the intended new real wage increase to the productivity increase of the following period. The inflationary process as so far described causes the real wage always to be brought back into line with the increase in productivity; it means that the wage-earners receive nothing which they would not have got if they had kept their money wage demands in line with productivity instead of pushing them beyond that line.

The adjustment on the monetary side requires that bank credit should, as in the case of the stable price level, expand by an amount sufficient to finance the increased wage bill (or the larger working capital corresponding to it) plus an amount (available for additional investment) sufficient to maintain the relative share of profits in the value of output. Assuming a constant income velocity of money, and a stationary working population, this condition is in the present case fulfilled when the money supply increases by the same percentage as *wages* rather than as productivity.

It should be emphasized that the applicability of the above analysis is strictly limited to the case where wage contracts are made at long (say annual) intervals, and where the cost-of-living adjustments are made at the same intervals, not at shorter ones. Thus it will not apply to situations where the real wage is kept constant between one wage contract and the next by a sliding scale system which adjusts the money wage to changes in the price level at intervals much shorter than the contract period, so that there is no significant interval of time during which the real wage can be adjusted back to the level of productivity by a rise in the price level. We shall deal with this situation in Section 4 below.

We now need to modify the above analysis in three respects:

1) The term E in our formula includes all income other than labour income, and therefore includes interest paid out to creditors. The interest paid out on old debts does not rise with the price level, and there is thus a margin here out of which wages can be increased beyond the increase in productivity without causing a corresponding price rise. This means a redistribution of income from property-owners to labour, and probably a diminution in savings.

Presumably, however, this margin would in the longer run — i.e. after a long continued inflationary process — disappear. Investors would sooner or later become wise to the disadvantage attaching to fixed interest securities, and would either concentrate their funds in shares or insist on a purchasing power clause which preserved the real value of debts and interest.

2) The country concerned, by inflating more than other countries while adhering to fixed exchange rates, may force the terms of trade in its own favour. Prices in the home currency of imported raw materials (which enter into domestic production costs) and of imported foodstuffs (which enter into the calculation of the cost-of-living-adjustment) will then lag behind the prices of domestically produced finished goods, and there will thus be created a second margin which allows real wages to move ahead of productivity without entailing a loss of profits for entrepreneurs.

This possibility for labour to reap the benefit of an improvement in the terms of trade procured by inflation cannot, however, last. For it entails a balance of payments deficit which will sooner or later force the country either to devalue or to check the inflation.

3) It follows from the assumption that the relative share of profits is constant that although profits *before* taxes rise in the same proportion as wages (before taxes), profits *after* taxes rise relatively less than wages (after taxes), so long as the tax progression is steeper in the higher brackets than in the lower ones, and so long as taxes are not reduced in response to the rise in government revenue. The distribution of income after taxes will thus change in favour of labour.

Some may regard the budget surplus that is here created as an advantage of the inflationary process on the grounds that, provided the government uses it to finance additional investments, these will lead to a further increase in productivity. The force of this argument is however weakened by two considerations. The first is that those who have to pay the higher real taxation may make up for the difference by saving and investing less, in which case the net addition to investment may be little or none. The second consideration is that the same effect could be achieved without inflation by an appropriate change in the tax structure.

We have so far assumed that the money supply is elastic, i.e. that the monetary authorities provide all the additional money neces-

sary to finance the increased wage bill and the increased profits. This assumption amounts to saying that the causal chain runs from higher costs and prices to a larger money supply and not, as in the quantity theory of money, from the larger money supply to higher prices. The " needs of business " — as the banking school would have expressed it — determine the money supply.

Although this may be a fair description of what happens in many real situations, the monetary authorities are not of course in principle under any compulsion to adapt the money supply to these " needs of business ". And the events of the past year have shown in many countries an increasing unwillingness on the part of the authorities to finance a cost-induced inflation. One aim of a " restrictive " monetary policy in the face of excessive wage demands may be to stiffen the attitude of employers, who may be expected to resist such demands more obstinately if they can no longer so easily obtain the funds with which to finance the higher wage bill and are less sure than previously that they can cover their increased costs by raising the prices of their products. Here, however, we shall look for a moment at what happens when the wage demands, though in excess of productivity increases, are granted, but at the same time the authorities expand the money supply, not in proportion to the wage rise, but only sufficiently to finance the productivity increase at a constant price level.

The effect must in all circumstances be to lower profits and employment. It is conceivable that a new equilibrium situation might be reached in which, though output and employment were both short of full, the price level was higher than previously. There might, that is to say, be a recession accompanied by rising prices. It is, however, also possible that the initial effect on profits, if it were very sharp, might set in motion a cumulative process downwards; and in that case prices might, despite the higher wage costs, drop below the previous level. How likely it is that they will actually fall in such circumstances depends partly on how rapidly the average productivity of labour rises as the level of employment falls.

It is in any case clear that, under this type of " restrictive " monetary policy, a combination of *falling* output and employment and *rising* prices is by no means excluded; and it is also evident that unemployment cannot be avoided even if prices are rising. This may be one of the cases in which unemployment is the price

that has to be paid by one part of labour in order to induce the other part to moderate its wage claims. But this view rests on the perhaps not universally valid supposition that union wage policy is sensitive to the volume of unemployment.

3. Demand-Induced Inflation

For purposes of the present section we shall take it that the essence of a demand-induced inflation is that it pulls prices up faster than costs, thus raising the relative share of profits; it contrasts with a cost-induced inflation of which the distinguishing characteristic is that of pushing prices up just in step with costs.

If, though wages increase only exactly in proportion to productivity, and there is thus no inflation from the cost side, entrepreneurs seek and receive from the banks more new funds for investment purposes than are necessary to keep the price level stable, the consequences will be the following: the demand for investment goods will go up, prices will rise faster than wages, job vacancies will exceed job applications, and the average hourly earnings of labour will rise (because of the increasing proportion of overtime pay) faster than wage rates. It is these last two phenomena which, as I pointed out earlier, are often taken to be the symptoms of a demand-induced inflation.

It would, however, be wrong to conclude that whenever they are present, no contribution to the inflationary process is being made from the side of costs (wages).

We saw in Section 2 that, when excessive money wage increases cause a cost inflation, the additional credit required to maintain full employment is composed of two elements. The first consists of an amount that is just sufficient to finance the additional investment in working capital which reflects the increase in the wage bill. The second element, which also goes to finance additional investment, consists of the amount that is required to maintain the relative share of profits in the value of output.

The total amount of bank credit actually made available by the banking system for additional investment purposes *of all kinds* may, of course, be greater than the sum of these two components. And in that case the total expansion of bank credit contains a third component which constitutes an element of demand inflation; and

the usual symptoms of such an inflation (an excess of job vacancies over job applications, and hourly earnings rising faster than wage rates) will then appear. The rise in the price level which ensues will represent the cumulative effect of the two sources of inflation combined, and will be greater than it would have been if only one of the two sources had existed. In such circumstances the excessive wage increases clearly bear part of the responsibility for the rise in the price level, and the fact that the symptoms of a demand inflation are present cannot be interpreted to mean that this is alone responsible for that rise.

Thus we cannot avoid the conclusion that whenever wages rise faster than productivity (we abstract here from the " margins " described previously) the inflation that occurs has a cost-induced component. If at the same time the additional finance made available for investment purposes exceeds what is required to cover the higher wage bill and to maintain the relative share of profits in output, investments are an additional source of inflation; and the symptoms of a demand inflation will develop. We then clearly have a combination of " cost-push " and " demand-pull " inflation.

A few words are in order here concerning the way in which rising profits shown by the national income statistics during a period of price inflation are to be interpreted. Even in the case of a pure cost inflation, profits, if they are just maintaining their relative share in the value of output, will rise in absolute terms. If the *relative* share of profits rises, this must mean either that a demand inflation has been super-imposed on a cost inflation, or that the demand inflation has been proceeding at an increasing pace.

There can hardly be any doubt that in the United Kingdom, where over the last few years — at least up to 1956 — wage increases have, according to all the available evidence, exceeded productivity increases, and at the same time job vacancies have been greater than job applications, and the rise in earnings higher than that in wage rates, there has been a combination of both types of inflation; and a policy which aims at checking wage increases at the same time as it cuts down investments is the appropriate one.

It is particularly important in connection with the conclusion that if wages are rising no faster than productivity they cannot be a factor contributing to an inflationary process, and that if such a process is under way it must be ascribed exclusively to " demand-pull " factors, to recall the restrictive assumption under which our

entire analysis has, for the sake of simplicity, been conducted. That assumption, namely, that the rate of profit (including interest) on capital remains constant so long as the relative share of profits in the total value of output is unchanged, would not be valid if a sharp rise in the capital-labour ratio was taking place. In such circumstances wages, though rising even less fast than productivity, might still be rising too fast to allow the price level to remain stable. Similarly, a decline in the degree of competition, while wages were again rising no faster than productivity, might lead to a price rise reflecting the pushing up of monopoly profits.

4. Chronic Inflation

In recent years a perhaps growing number of economists have advocated a mild chronic inflation as a means of maintaining full employment. The inflation here envisaged is obviously of the " demand-pull " type. It implies that the monetary authorities see that a constant pressure of aggregate demand against the supply of commodities is maintained, and that prices are thus always running a little ahead of costs. This policy is supposed to ensure that entrepreneurs have the incentive to keep investments high so that full employment is continuously preserved. It has often been suggested that a constant rate of rise in the price level of 2-3 per cent might be sufficient for this purpose.

It may be questioned whether an upward movement in the price level which was continual could actually be kept down to a constant pace. And a second objection to the chronic inflation thesis is perhaps still more damaging: situations undoubtedly can arise, as a consequence of the inflation itself, where no matter how fast the inflation is proceeding it cannot provide the stimulus which helps to guarantee full employment.

Suppose that in a system in which new wage claims are made at fairly long (say annual) intervals, the workers keep their claims exactly in line with the movement in productivity, so that no inflationary tendency emanates from the cost side. But the monetary authorities, following the advice of the advocates of chronic inflation, set a demand inflation going, so that the real wage increase just granted is now reduced, by the price rise, *below* the increase in productivity; real profits rise, and a stimulus is thus provided for entrepreneurs to keep investments high.

If this process continues wage-round after wage-round, organised labour will sooner or later make an attempt to keep real wages intact by following one or the other of two procedures. Either it will ask, at each new contract date, for a money wage rise which, besides allowing for the increase in productivity, makes up for anticipated future price rises as well as past ones; or it will impose a sliding scale system which adjusts money wages to changes in the cost of living continually, rather than at the discontinuous intervals corresponding to the contract dates. It makes a good deal of difference to the final outcome which of these two procedures is adopted.

The first one has been incorporated in some recent wage contracts in the United States. The second has been in operation for a number of years in France and Italy.

If the first procedure is adopted money wages will rise at an ever faster rate as time goes on; and so will the price level. Thus, if wage-earners aim at a current rise in real wages of, say, 10 per cent and expect a price rise before the next wage-round of 5 per cent, they will ask for a money wage increase now of roughly 15 per cent. This procedure will in turn produce a cost inflation, which will be the source of a further price rise since the money (though not the real) wage will now rise faster than productivity. To this cost-induced inflation a further dose of demand inflation will then have to be added if the increase in the real wage is again to be reduced below the increase in productivity. In this way the pace of inflation, required to give the stimulus which is supposed to guarantee full employment, will necessarily accelerate.

It is when the second procedure is followed, however, i.e. when a sliding scale is imposed and serves to keep the real wage intact even during the intervals between wage contracts, that a situation is reached in which inflation cannot help to maintain full employment. For in this case, a demand inflation in the sense in which we have so far been using the term is excluded, since prices cannot move ahead of money wages to any significant extent. If the authorities inflate nonetheless, the result will of course be a price-wage spiral just as under the first procedure, but the stimulus which is supposed to help keep the employment level high is lacking. By the same token it is not possible, in the presence of the sliding scale, to use the inflationary process to "correct" wage bargains which raise real wages more than in proportion to productivity.

No amount of inflation — at least once the two " margins " due to the fixity of interest payments and the lag in the prices of imports have been exhausted — can in this case prevent a decline in real profits and/or in employment.

It is obvious, in general, that once all cost items are continuously adjusted to the price level, a demand inflation, in the sense of an inflation which causes a divergence between price and cost movements (or reduces the real burden of wage and interest payments), is no longer possible. If we still want to draw a distinction, in the case of the sliding scale, between a cost- and a demand-induced inflation, we must make it dependent on what has heretofore been treated as a secondary aspect, namely the identity of the immediate source of the addition to aggregate spending. We must make it dependent, that is to say, on whether the inflation is initiated by " excessive " business investments or by a budget deficit, on the one side, or whether it is initiated by " excessive " increases in the wage bill, on the other. In all cases where the sliding scale of wages does not apply, the demand inflation as defined by this secondary characteristic coincides with the demand inflation as defined by the primary and more substantial aspect of its effect in drawing up prices faster than costs. When, however, the sliding scale prevails, the demand inflation merges with the cost inflation, in the sense that both now draw up costs as fast as prices, and are therefore indistinguishable from this point of view.

We may summarise the main consequences of the two procedures by which organised labour may seek to keep real wages intact as follows: the first procedure — that of discontinuous (say annual) adjustments of money wages to the rise in prices — does not prevent the real wage from being periodically forced down by the inflation, and hence the stimulus which is supposed to help maintain the employment level is at work; but the pace of the inflation required to keep this stimulus alive is a continually accelerating one. The second procedure — under which adjustments of money wages to prices are made at such short intervals as to be practically continuous — leads to the result that, although again the pace of inflation may increase as time goes on, the real wage cannot be perceptibly lowered by the inflation, and the stimulus to the maintenance of a high level of employment is not therefore present.

5. Conclusion

We may now summarise some of the more important conclusions to which the preceding analysis leads.

1) There are at least two sets of circumstances in which unemployment cannot be avoided even with a rising price level. The first is the case of excessive wage increases combined with a "restrictive" monetary policy; and the second is the case of excessive wage increases combined with sliding scale adjustments to the cost of living.

2) The magnitude of the rise in productivity sets a limit to the real wage increase that is compatible with the maintenance of full employment. If money wages are pushed ahead of productivity, the ensuing cost inflation will — in the absence of a sliding scale — adjust real wages back into line with productivity, except in so far as, and so long as, the fixity of interest payments and the lag of import prices create a margin out of which a real wage increase exceeding the productivity increase can be covered without loss of profits to the entrepreneurs.

3) If money wages are raised faster than productivity, and the sliding scale is operative, the ensuing cost inflation cannot "correct" the real wage, and unemployment will result. Provided the average product per unit of labour is, over the relevant range, a decreasing function of employment, it will rise as employment falls; and the part of the labour force which remains in employment will enjoy a real wage higher than that which the increase in productivity would allow were full employment to be maintained. But, once employment is reduced, this wage is again in line with productivity.

4) A demand inflation, if it means an inflation which pulls prices up faster than costs, is by definition possible only so long as not all cost items move up *pari passu* with prices. A demand inflation of this kind will, if it continues for any considerable length of time, necessarily accelerate. So long as it continues it creates a stimulus for entrepreneurs to keep investments high. The same stimulus could, however, be produced just as well without inflation, were labour to follow a wage policy designed to keep wages always lagging a little behind productivity. For it is by creating such a

lag that a demand inflation is supposed to give support to the employment level. Many economists would perhaps argue that this type of wage policy would be no guarantee against unemployment; but they would then logically also have to admit that a chronic demand inflation does not offer any such guarantee either.

5) A basic theme of this article has been that inflation affects the total volume of employment and output only so long as it changes some *real* relationship in the economic system, and that the power of continuous inflation to do this will be progressively weakened as devices are increasingly adopted by the public to protect the real values of earnings and of property against the effects of inflation. Once these devices have been perfected to the point where inflation can no longer affect the real share of wages in output, monetary manipulation can no longer act as an instrument helping to maintain full employment.

This is not to say that the economic process, once this stage has been reached, and although inflation continues, will run its course, in real terms, in exactly the same way as it would have done without inflation. A properly functioning monetary system makes its own contribution to productivity. The fact that the functions of money have to be partly taken over by indexing and other devices, or that money no longer performs its function as a unit of account, imposes on the economic system an extra real cost, in the shape of tasks that would not need to be performed at all if the price level were reasonably stable. The amount of " unproductive " work necessitated by this partial abdication of money from its natural role is probably underestimated in much of the current discussion of the pros and cons of inflation. In other words, inflation would need to have counted against it its effect in reducing the average productivity per unit of labour below the level that would be reached with a stable monetary system.

Thus we may conclude, finally, that continuous inflation, while it will not have a permanent effect in the positive direction of preventing unemployment, may have a permanent effect in the negative direction of slowing down the rate of growth in aggregate output.

Zürich FRIEDRICH A. LUTZ

The Canadian Money Market Experiment[1]

In the absence of a short-term money market, the central bank in the country concerned is by no means entirely powerless to control the activities of the commercial banks and thereby the supply of money that is made available to the economy. In these circumstances, however, if the central bank is to exert more than a moral authority, it must usually be prepared to intervene directly to control commercial bank liquidity and interest rates (2). Yet in its formative years, when these conditions are most likely to apply, the central bank will be feeling its way and somewhat loath to adopt measures that smack too obviously of dictation, since in the successful implementation of their policies the authorities must always depend to quite a considerable extent on the co-operation of the rest of the financial community.

By way of contrast, where a market in short-term monetary assets already exists, the central bank can buy or sell the relevant securities in the open market and thereby exert an influence both on yields and on money rates consistent with the reactions of market institutions. Such indirect action, though it may be supplemented by other measures, is likely to facilitate a smoothness in adjustment that is improbable when the authorities are obliged to depend solely on the direct variation of bank liquidity and/or of interest rates. In addition, the commercial banks can resort to the short-term

(1) The author wishes to acknowledge the generous assistance received from the Leverhulme Research Awards, which enabled him to visit the main money market centres in Canada in October 1955, and the very ready co-operation both then and subsequently of members of the banking and financial community actively operating in the Canadian money market. The tables are based on data extracted by Miss Vera Wohl of the Economic Research Division of the London School of Economics. However, the author alone is responsible both for the views expressed and for any errors or omissions.

(2) Where a bond market exists, as it did in Canada for many years prior to the development of a "money market", it can be of considerable help to the central bank in carrying out its operations, but even if it has sufficient breadth to permit transactions of the required magnitude the effects on short-term interest rates are likely to be much less direct.

market for the purpose of employing their temporarily surplus funds or, whenever necessary, of restoring depleted cash reserves to their required level. In order to secure these advantages where such a market has failed to emerge of its own accord, the authorities themselves have on occasion stepped in and actively sponsored its establishment. This is what happened in Canada.

I

The first step might be said to have been taken as far back as March 1934, when arrangements were made to sell Treasury bills by tender. The number of issues was increased progressively and the amount of Treasury bills outstanding expanded steadily. By 1937, tenders were being called on a fortnightly basis and, in January 1953, a weekly tender was introduced. In the early years and for a long time thereafter, it was the " chartered banks " (as the commercial banks are called in Canada, because they must be " chartered " or licensed by the Federal Parliament) that created the demand and " made " such market as there was. Occasionally, the banks traded in bills, but as a rule only with the Bank of Canada itself. Dealings did not usually take place between one chartered bank and another. There were several reasons for this: (i) the Bank of Canada, given the chosen level of rates, always operated with a narrow spread between its buying and selling prices for bills, thereby reducing the risk of loss and ensuring their liquidity; (ii) direct sale to the Bank of Canada enabled a chartered bank to adjust its cash position without the delay associated with going through the clearing; and (iii) sales made to the central bank would be concealed from the prying eyes of competitors. However, the Bank of Canada did not sell as freely as it bought — often it " would not sell bills between issues at all and seldom immediately after an issue so as to discourage artificially low tenders " (3).

Even at this stage, dealers may have done a little business in bills, but they never carried " balances " (i.e. inventories) in bills. From time to time, they would tender on behalf of a customer (e.g. a non-financial corporation) for a small commission, but this was regarded as a service rather than as part of their normal business.

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(3) E. P. Neufeld, *Bank of Canada Operations 1935-54*, (Toronto, 1955), p. 37.

Alternatively, a dealer might buy bills from a chartered bank for his customer. However, it was not until the early years of World War II that dealers began to look at Treasury bills rather more seriously, though still nobody thought of carrying a "balance". Then, during the period 1944-46, certain dealers began to consider whether, given the costs involved in borrowing for the purpose, it would be worth their while to carry a small inventory. Nevertheless, it continued to be the chartered banks that carried the bulk of the bills available. At the same time, they had been given some incentive to look elsewhere than to the Bank of Canada for buyers of their bills, in consequence of an increase in the Bank's spread between its buying and selling prices on Treasury bills so as to create a difference in yield of from 0.15 per cent to 0.25 per cent between bills held to maturity and those sold before maturity. This may have helped to broaden the market a little, but the chartered banks still looked mainly to the central bank when they needed to convert bills into cash.

The next major development came in January 1953, when the monetary authorities in Canada decided to accord "limits" to certain dealers for the purpose of securing accommodation on the basis of a sale of Treasury bills under an agreement to repurchase. These facilities were made available at a cheaper rate than that charged by the chartered banks, in order to encourage the dealers both to operate in bills and to hold them in inventory. By this means, it was hoped to increase non-bank holdings of Treasury bills.

This move was something of an experiment and the authorities indicated that any of the dealers could try their hand at it. Originally, about 20 dealers came into the scheme, but a number of them very soon discovered that it was not a type of business they were interested in and they therefore dropped out. This left a group of 13 dealers to which the new arrangements applied, subsequently reduced by withdrawal to 12. In September 1957, the number of participating firms was again restored to 13 (4). However, all those that withdrew did so voluntarily. In this sense,

(4) There was nothing predetermined about the number that might participate in the market from time to time. It is open to any firm that is prepared to bid each week at the tender and actively to engage in money market business to apply for repurchase privileges at the Bank of Canada.

the dealers that took part in the experiment chose themselves. Nevertheless, the Bank of Canada was not completely passive. They discussed the relevant techniques and any difficulties with firms that were interested and those that were prepared to undertake these new responsibilities were then granted lines of credit at the Bank for the purpose. In this way, they became " approved dealers ". The houses concerned were drawn from firms that already acted as jobbers in the market for short-term government securities. Their lines of credit were based on their volume of business, the range of their contacts in the money market, and their understanding of the relevant mechanism, all of which were taken as indications of their ultimate capacity to undertake expanded operations in Treasury bills. To distinguish them from other dealers in securities, they came to be referred to as " jobbers ", though this term is not invariably applied.

On the basis of these arrangements, the market began slowly to develop, as the dealers felt their way into it. Although there were limits on the types of securities that were traded in, they went beyond Treasury bills and included other short-term government securities (i.e. those with maturity dates of up to 3 years). By April 1954, the Bank of Canada felt that the dealers were ready for the next step and the chartered banks were now invited to make available to them facilities for borrowing on a day-to-day basis. If the dealers were to carry adequate inventories of Treasury bills and of other short-term government securities, it was imperative that they should be able to borrow in appropriate amounts at rates of interest and a required margin of security that would leave them with enough profit to provide an incentive. From the point of view of the banks, it was important that loans made at rates that would necessarily tend to be lower than the yield on Treasury bills should be highly liquid. This was the reason why the accommodation in question was specifically defined as " day-to-day " loans to distinguish them from the ordinary " call loans " made by the banks to brokers and dealers, which loans being subject to long-standing banker-customer relationships were not in fact always strictly callable (5). However, if a day-to-day loan was called before

(5) Nor was the rate varied at all frequently. The usual custom was for the chartered banks to agree a minimum rate on call loans, which was reconsidered from time to time but not always varied even then.

noon on any day, it had to be repaid on that day. Conversely, if a dealer wished to liquidate an outstanding loan (either because he no longer needed the money as a result of a sale of securities, or because he could borrow it more cheaply elsewhere), he also had to give notice of his intention to do so before noon on the day in question (6). The first of these loans were made in June 1954.

From the point of view of the chartered banks, the introduction of the day-to-day loan was expected to have several advantages. Thus, it would provide them with a highly liquid earning asset and facilitate the fullest possible employment of their funds. Moreover, instead of the banks' having to sell Treasury bills whenever it became necessary to supplement their cash resources, the immediate shock could now be absorbed by "calling" their day-to-day loans. At the same time, the increased activity of the dealers and of their customers would tend to narrow the spread between buying and selling rates. In effect, this would then increase the liquidity of the Treasury bills still held by the banks since it would reduce the possible loss on actual sales prior to maturity.

The chartered banks were further encouraged to diminish the extent of their dependence on selling Treasury bills to the Bank of Canada as a means of adding to their cash when in June 1954

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(6) Although the rule is that no "calls" will be made by a bank after 12 noon, both the banks and the dealers usually like to know where they stand by 11.00 a.m. Nevertheless, a bank may well decide to *lend* in the afternoon, if money comes in late and there is a demand for it. Actual payments or deliveries of collateral need not take place until 3.30 p.m. The main factors that determine a bank's money position are two-fold: (i) There is the movement of funds through the clearings, the details of which begin to come in from the East early in the morning, with figures from other time zones following in succession (when it is 9.30 a.m. in Montreal and Toronto, it is 10.30 a.m. in Halifax, but only 6.30 a.m. in Vancouver, the clearing results from which come in by about 1.00 p.m. (or a little later) Montreal and Toronto time. Latterly, the Western clearings have become increasingly important as a result of the economic growth of British Columbia and, from time to time, the consequent delay in establishing the money position of the banks has caused some embarrassment in the market). (ii) There is the Bank of Canada's adjustment of Government balances held with the chartered banks, funds either being called for deposit with the Bank of Canada or added to the Government balance with a chartered bank as a means of "smoothing out" the flow of cash. However, this will now influence the banks' cash figures on the day on which the adjustment is made only if the transaction is effected before the morning clearing, since subsequent to May 27, 1957 such deposits or withdrawals were put on a clearing house funds settlement basis. Cheques for Government account are also now cleared at various Bank of Canada agency points and do not all flow into Ottawa. By this means, it was hoped to speed up the clearing of Government funds.

the Bank began to pay for Treasury bills sold to it by means of "clearing vouchers" which the chartered banks received on the day following the sale, but which only entitled them to funds at the Bank of Canada after being passed through the clearing, i.e. on the next succeeding day. This meant that the banks could increase their cash reserves more rapidly by calling their day-to-day loans than by selling Treasury bills to the Bank of Canada and there was clearly an incentive to employ the new procedure rather than the old (7).

During the first week of the new experiment, an agreed rate of 1½ per cent was charged on day-to-day loans, so that the market would get off to an orderly start. Thereafter, the rates charged were determined competitively in response to general monetary conditions. Sometimes, a day-to-day loan may be allowed to "run on" at the same rate. In any event, the rates on loans already on the books may only be re-negotiated once each day. However, when the market is active, the rate on new loans may change from hour to hour. In order to centralise all the relevant information and to ensure that the market in day-to-day loans was developed on an "impersonal" basis (i.e. was in fact divorced from established banker-customer relationships) the banks agreed among themselves to communicate the rate established in any transaction involving $1 million or more to the "exchange broker" for the purpose of reference and record. Usually, but not always, the rate that had to

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(7) Borrowing at the Bank of Canada is also a quicker way of securing central bank cash than selling Treasury bills to it, but it is more expensive and, in any event, the money must be borrowed for a minimum of a week. In addition, some of the chartered banks as a matter of principle, still dislike being in debt to the Bank of Canada and will employ almost any alternative rather than do so, especially if it means borrowing over balance dates. Even during 1956, when the banks were under pressure to build their liquid assets ratio up to a minimum of 15 per cent of deposits (see below), Bank of Canada advances to the chartered banks were not on an average a major source of cash reserves. "In 1956 advances to chartered and savings banks were outstanding on 105 out of 254 business days. On a daily average basis for the whole year advances were $8 million as compared with total cash reserves of $873 million. The maximum amount of advances outstanding on any one day was $60 million". (Bank of Canada, *Annual Report*, 1956, p. 44). Under existing arrangements, advances are made against the hypothecation of appropriate securities for a fixed period of 7 days. The first advance in any calendar month (up to an amount specified for each bank) bears interest at Bank rate. A second advance to the same bank, the renewal of an advance, or an advance in excess of the specified amount attracts interest at a rate higher than Bank rate. (*Ibid.*, pp. 44-5).

be paid on day-to-day loans was slightly below the tender rate on 91-day Treasury bills, so that dealers were generally able to carry inventories in this security without loss.

In order to encourage the dealers to carry as much inventory as was consistent with the available supply of day-to-day money and as a means of underwriting the experiment, the Bank of Canada stood prepared to act as "the post of last resort". Not being specifically authorised to lend to dealers, the Bank arranged to make accommodation available up to negotiated limits (8) to certain dealers on the basis of a sale and repurchase agreement, whenever it proved impossible to raise sufficient money elsewhere with which to carry inventory. Applications for such assistance must generally be made before 2 p.m. on any day (9). The cost of this accommodation was calculated as the difference between the prices at sale and repurchase, the rate charged being equivalent to Bank rate (10) and therefore in the nature of a penalty. These facilities, it should be emphasised, were accorded as a privilege and not as a right, and it was the responsibility of the dealer to tap every possible source of available money before going to the Bank, including not merely the chartered banks, but also the trust companies, the insurance companies, provincial treasurers, corporations, and foreign financial institutions. He should only apply to the Bank of Canada when he had exhausted all other alternatives. The use made of this facility has varied appreciably between the various dealing

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(8) These limits might be re-negotiated from time to time, either on the application of the dealer concerned, or at the suggestion of the Bank of Canada, but always at the discretion of the latter.

(9) This time was chosen because of the necessity to allow a sufficient time margin to attend to the mechanical details of computation, since a sale and repurchase agreement is more complicated than a straight loan. Nevertheless, there is some flexibility. The Bank likes to have all borrowing applications in by 2 p.m. simply because a dozen dealers descending on them at the last minute (the Bank closes for banking business at 3 p.m.) could not be accommodated within the time available. Yet the partners of dealing firms know that as a matter of privilege they may be permitted to go to the Bank of Canada later than 2 p.m., possibly even at 3 p.m. One or two dealers might then be accommodated, whereas all of them could not.

(10) Prior to the introduction of the day-to-day loan market, it was possible to borrow from the Bank of Canada against securities with a maturity in excess of 3 years. In such cases, a rate approximately ¼ per cent *above* Bank rate was charged. When day-to-day loans were instituted and the supply of Treasury bills was expanded, this was no longer necessary and central bank loans against the longer-dated securities were discontinued.

houses, depending largely on the volume of business done. Some have been in the Bank with relative frequency; others only rarely (11).

Initially, the dealers' chief difficulty was to find customers for the bills they carried in inventory, since there were no established retail outlets. But gradually they were able to build up this side of their business mainly by selling bills to corporations. They were greatly assisted in this by the somewhat rigid attitude of the chartered banks in respect of withdrawals from fixed deposits. The large corporations were accustomed to keep their temporarily surplus funds on deposit with a chartered bank. If they needed their money earlier than they had anticipated, the chartered banks would release it from fixed deposit, but the latter would pay no interest, not even at a rate reduced to accord with the shortened maturity (12). This practice gave the dealers their opportunity and they attempted to persuade corporations to put such moneys into Treasury bills, which if the maturities selected turned out to be inappropriate could always be sold at a price that would secure them some sort of return on their investment. At that time, it was the practice of the banks to vary their rates on fixed deposits only infrequently and usually the rates allowed were well below the Treasury bill yield. However, after December 1955, the banks adopted a more realistic attitude and they now set a fixed deposit rate for amounts of $100,000 and over placed for 90 days or more at ¼ per cent below the most recent average Treasury bill tender rate.

Another facility that greatly assisted the dealers in developing retail outlets was the arrangement whereby the Bank of Canada would release securities at whichever of the Bank's nine agencies the dealer might stipulate. Thus, a dealer was permitted to sell Treasury bills (or bonds) to the Bank of Canada under an arrangement to repurchase and, when the securities were released on repurchase, the dealer could have them delivered at no cost to himself at any one of these points across the country and, if he

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(11) Repurchase of the relevant securities may be made at any time within varying periods not exceeding 30 days. The average period has been 2½ days. In 1956, the Bank of Canada held securities purchased under resale agreements on 62 business days, the maximum amount outstanding on any one day being $37 million and the daily average for the year $2 million. (See Bank of Canada, *Annual Report*, 1956, p. 45).

(12) Usually, such moneys were fixed for 90 days. If a corporation found that it needed the money after (say) 85 days, it would pay it to borrow against the security of its fixed deposit for the remaining 5 days rather than sacrifice the interest for the whole period.

so wished, in separate parcels (e.g. part at Halifax, part in Calgary, and the remainder in Vancouver). Furthermore, since January 1957, any financial house has been allowed to hand in Treasury bills or short-term Government bonds at an agency of the Bank of Canada and to arrange for similar securities to be released the same day without charge at any other agency of the Bank of Canada.

One way of seeking out potential customers is to watch for new issues of bonds (e.g. by a public utility). It is quite apparent that on the day the bonds are delivered against cash the borrower will acquire large balances that cannot possibly be spent immediately. Formerly, such funds would as a rule have been placed in bank fixed deposits, but now the dealers offered Treasury bills as a means of absorbing moneys available for temporary investment. They would follow much the same procedure when tax payments began to come in to municipalities and provincial governments (13). Latterly, the dealers have had to be increasingly on their toes to attract this business from the corporations, because of the increasing competition of the finance houses, which sell their paper to corporation treasurers, usually through dealers that act as their agents. Moreover, the absence of a true market in this paper has been largely counterbalanced by offering a wide range of maturities (from one to twelve months) and denominations. Further, when money is tight, most of the finance houses have been prepared to repurchase their own paper in order to maintain a good market for it. Alternatively, if a finance house suddenly finds itself with a surplus of funds, it may well buy back its own paper ahead of maturity. Some dealers also act as agents in offering to corporate treasurers the promissory notes of other business corporations, a commission being paid by the borrowing corporation.

To an increasing extent, the banks themselves are becoming customers, selling Treasury bills to the dealers when they are short of cash and buying them when they require bills of particular maturities, or when they " miss " their quota of bills at the tender. They may also enter into " pre-tender contracts ". Certain of the dealers,

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(13) As yet there is no trading market in Canada for commercial bills, which in some centres in other countries still provide an alternative to investment in government paper. Commercial bills exist in Canada, but they usually remain in the portfolios of the chartered banks and are never sold. It is possible that a trading market in these bills could be developed, if the Bank of Canada were itself prepared to rediscount this type of paper.

though not all of them, have been willing to make a contract with a bank on the day of the tender, but before the tender results are actually known. Usually, the dealer undertakes to " confirm " to the bank a stated amount of bills at the average tender yield *minus* .02 in yield, subject to a bank not having to pay more than the high bid on a tender. For example, if the average tender rate turned out to be, say, 4 per cent, a bank would get its bills under a pre-tender contract at 3.98 per cent, unless (as may happen very occasionally) the high bid on the tender gave a yield of 3.99 per cent, when the dealer would have to confirm the bills to the bank on that basis. From the bank's point of view, a pre-tender contract is simply a hedge of its own judgment when the tender is likely to be tricky. But practice varies from one bank to another and the banks could undoubtedly make much greater use of the dealers' facilities than in fact they do. In any event, so long as they remain in the tender, the banks can to a considerable extent adjust their bill portfolios without resorting to the dealers at all, merely by tendering afresh, or letting bills run off, according to circumstances.

A lot of business is done by the dealers with their customers on a " buy-back " basis (14) similar to the Bank of Canada's purchase and resale facilities. This technique is usually employed when a dealer is unable to supply the particular maturity that an investor wants and it enables the former to use the longer term bonds in his inventory to meet the demand for a short-term investment, but it has the added advantage of providing a convenient and economical means whereby the dealer can carry additional inventory (15), especially when the buy-back contract permits substitution of securities during the life of the " buy-back ". Subsequently, a dealer may attempt to match his " buy-backs " with Treasury bills in inventory, so that when he is called upon to repurchase he has bills maturing to provide the necessary funds. However, Treasury bills mature only on Fridays and some dealers therefore feel that it is simpler to obtain the funds required by using the facilities of the money market on the day that the " buy-back " matures.

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(14) Formerly, certain of the banks were also prepared to do " buy-backs " for their customers, but this practice was discontinued in 1955 at the request of the Bank of Canada.

(15) He would be anxious to do this if he felt that market prices were likely to move sharply upwards. By means of buy-backs, it is possible for a dealer to carry a heavier inventory in relation to his line of credit with the Bank of Canada, because only the amount of his day-to-day loans from the chartered banks is geared to this line of credit.

The " buy-back " technique also confers certain advantages on the customer, since he gets a tax advantage (16). Further, because of the agreement to repurchase, the risk of depreciation is borne by the dealer. Indeed, it is because of this risk that most dealers have been unwilling to do " buy-backs " for periods of longer than 60 days and certain of them refuse to do them at all. From the point of view of the dealer, the " buy-back " technique nevertheless represents a convenient means of meeting the specific maturity requirements of his customer, when the dealer is unable to sell outright securities that accord precisely with the term that the purchaser wants. Alternatively, dealers may from time to time borrow securities for the purpose of meeting an order. As the result of an agreement reached in February 1957 between the Bank of Canada and the dealers in government securities, the market facilities for borrowing such securities will now be supplemented by the Bank of Canada upon request. Under this arrangement, a dealer who is unable to borrow a particular security in the market at a satisfactory charge may borrow it from the Bank of Canada upon temporary deposit of other securities. Such a switch has to be reversed within a stated time limit, usually 30 days, though this period may be extended twice for a total currency of 90 days. The charge made for this service varies with the size of the transaction and is also increased by half on the occasion of each renewal. The provision of these switch facilities, which are also offered by other central banks (e.g. the Federal Reserve Bank of New York), was regarded as another step in the development of a mature and stable money market. So far, and despite their cheapness, these facilities have been used only sparingly.

Formerly, a barrier to the greater stimulation of dealer interest in broadening the market for Treasury bills was the charge made for " daylight overdrafts " by the chartered banks, otherwise known as " over-certification " (17). This might arise in several different

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(16) A corporation pays tax only on the interest it receives on a bond and any capital gain is tax-free, i.e. when a buy-back is done in short-term Canada bonds the coupon is taxed, but the difference between the corporation's purchase price and the price at which the bond is repurchased by the dealer is not. However, this is not the case with Treasury bills, where the whole of the gain is taxable.

(17) A practice that had its beginnings in the dealers' need of bank certified cheques in connection with their underwriting operations. The nature of the service performed is most obvious in those cases where the banks over-certify cheques for stockbrokers on the basis of

ways. For example, if a dealer wished to repay a bank loan in order to release the security for sale, or to employ it as collateral for a new loan from another bank, he would require a certified cheque for the purpose. Again, no dealer can hold in his portfolio the whole range of maturities that may from time to time be demanded. Frequently, a dealer will be obliged to go out and buy up the particular security required by his customer. Since he would not normally have available the large sums of working capital necessary to finance these purchases in advance of sale to his customer, a " bridging " operation becomes necessary. The procedure, therefore, is for the dealer to request from his bankers a certified cheque with which to pay for the securities purchased, on the understanding that he will " cover " the amount before the end of the day with the proceeds of his sale of securities. At the time the new experiment was launched, the charge for " over-certification " was 1/100 per cent per diem, which was regarded by the dealers as prohibitive if they were to employ this technique as the means of facilitating extensive dealings in Treasury bills. The banks therefore agreed to reduce the " over-certification " charge to 1/250 per cent per diem. This rate was applied to all types of business — money market and " other " — but its existence continued to operate as a considerable impediment to the free flow of funds within the money market. In theory, the dealers should have borrowed on a day-to-day basis from the bank(s) offering the cheapest money, but when the cost of " over-certification " was taken into account, it was not always worth their while to respond to small changes in money rates. For this reason, they tended to remain tied to a particular bank, leaving elsewhere in the system unused pools of money, which in a less imperfect market would have been mopped up. Thus, there were occasions, when money was easy, where a reduction in the rate on day-to-day money of 1/8 to 1/4 per cent made no difference to the demand. There were two reasons for this: (i) the " over-certification " charge made

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a wide range of securities that the latter are in the process of purchasing. The charge made is therefore largely a reward for the assumption of an uncovered risk. To some extent, too, an interest element is involved, since in effect the parties for which cheques are certified are furnished with additional working capital for the purpose of acquiring the relevant securities, though if more than interim accommodation is required the " daylight overdraft " will have to be replaced later in the day by a secured loan on which interest proper will be charged.

it expensive for dealers to move from one bank to another in search of cheaper money, when no more than 1/8 to 1/4 per cent would be saved in interest; and (ii) especially in the earlier stages of the experiment, when funds were plentiful, dealers were loath to repay day-to-day loans because of the fear that " they would not be able to get back into the market " when money became short. These practices were by no means universal (18), but they were fairly general. The banks, too, were not always willing to " push their rates to the limit " and even when the demand for money was there the supply sometimes dried up when rates were still relatively low, the banks themselves being concerned not to " prejudice " good relations with their borrowing customers (19).

At the time, bankers were inclined to dismiss as unimportant the effects of the " over-certification " charge (20) and they stressed the methods that dealers had developed to minimise the charges they had to pay. Thus, to quote an example given by R. M. MacIntosh, suppose " a dealer has bid successfully at the Thursday treasury bill tender for $5,000,000 in new bills. These must be picked up at the Bank of Canada agency by 3.00 p.m. Friday... The dealer usually attempts to arrange his bank loans on Friday, and his ' cage man ' plans and executes the mechanics of the banking process, with the aid of one or more messengers to carry out the physical transfers involved. A dealer obtains a certified cheque for $1,000,000 at Bank A, paying $40 in over-certification charges;

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(18) At least one dealer maintained that he kept his borrowings from the banks " pure " and always took the cheapest loan.

(19) Cp. R. M. MacIntosh, " The Day-to-Day Loan Market in a Year of Easy Money ", *The Canadian Banker*, Winter, 1955, p. 34:

" In the first eight months, the day-loan rate was almost too steady, scarcely ever reflecting the rise and fall of cash reserves. Probably the main reason for this was the state of extreme ease in the money market, which meant that some of the 10 banks were always in funds which could be had at almost any rate. But one factor may have been a certain amount of rigidity on the part of both jobbers and bankers until experience was gained. In the early stages, the jobber tended to ask: ' Can you let me have $5,000,000? ' rather than: ' Can you let me have $5,000,000 at 1¼%? '. Likewise some of the banks seem to have been willing to push out day-loans irrespective of the yield. This has occasionally led to anomalous situations. For example, when the money-market became very tight on two or three occasions in late 1954, the day-loan rate went above 1¼% only once, although the Bank of Canada's discount rate was then 2% and several purchase and resale agreements were arranged at that price... Conversely, money was freely offered in early May, 1955, at ½%, although about 1¼% could be had on 91-day bills at that time. "

(20) See, for example, R. M. MacIntosh, *loc. cit.*, pp. 35-6.

he presents the certified cheque to the Bank of Canada agency, and receives delivery of $1,000,000 in treasury bills; with these bills as collateral, he obtains a day-loan of $1,000,000 from Bank B, C, D or perhaps A. He draws out the loan in the form of a certified cheque, and returns to the Bank of Canada for a second $1,000,000 in bills. This process is repeated three times more, and on the final trip the dealer pays off the original $1,000,000 over-certification at Bank A with his fifth day-loan of $1,000,000. He now has $5,000,000 in treasury bills at a cost of only $40 plus the day-loan rate plus insurance and messenger service. By the use of this roundabout technique, the jobber manages to cut down his over-certification charges appreciably. He can therefore scarcely contend that the over-certification rate is a barrier to flexible securities trading " (21). Yet though the dealers could partially evade the costs of " over-certification " in this way, it did seem to involve a large amount of seemingly unnecessary effort and to employ a degree of ingenuity that might have been more usefully applied elsewhere.

At first, the chartered banks were unwilling to make any further concession, but as from March 18, 1957, the banks agreed to waive completely their " over-certification " charges in respect of *bona fide* money market transactions, though the charge continued to be levied on " other " transactions (e.g. when securities are withdrawn for sale, or when securities are bought, or money is borrowed *outside* **the banking system**). Subject to a declaration as to the nature of the transaction (22), a dealer might apply to a chartered bank to have his cheque certified without charge for the purpose (i) of acquiring direct from any Canadian chartered bank or the Bank of Canada specified securities that are to be lodged as collateral for a day-to-day loan at the bank granting the certification; and (ii) of effecting delivery direct to the Bank of Canada of specified securities already lodged at a chartered bank as collateral for a day-to-day loan that has been called by the latter, when the Bank of Canada in its capacity as lender of last resort is itself prepared to

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(21) *Ibid.*, p. 36.

(22) This is made on a slip affixed in duplicate to the cheque signed by the dealer applying for the free certification. There are spaces on the slip where the dealer can indicate the nature of the transaction. The original slip is retained by the bank certifying the cheque and the duplicate travels with the cheque to the payee bank, which then releases only the securities specified on the form.

make a loan to the dealer in question (23). At the same time, the chartered banks agreed to accept as collateral for day-to-day loans Government-guaranteed Canadian National Railway Bonds maturing within 3 years on the same basis as direct Government of Canada issues of similar maturity. Guaranteed railway bonds also became eligible paper at the Bank of Canada.

One of the most direct consequences of the elimination of over-certification charges on money market transactions has been the increase in the turnover of loanable funds. It is now worth the dealers' while to seek out the cheapest money available and to repay loans that are running at higher rates. Moreover, the greater degree of freedom with which money now moves has been reflected in the finer adjustment of rates. These are now changed in 1/8s rather than in 1/4s of one per cent.

Another cost that appears to have hampered the freer flow of funds is the insurance premium that has to be paid to cover the risk of loss when bills are moved "across the street". This particular impediment might have been overcome by establishing centralised clearing facilities. This would have permitted the parties merely to exchange entitlements to securities instead of the securities themselves, thus eliminating the need for insurance. Indeed, the possible provision of such facilities was actually discussed, but the suggestion was not proceeded with, because of the limited amount of inter-dealer trading and the belief that individual dealers could in any event so arrange matters as to minimise expenses.

II

One of the main bases of the new money market experiment was the provision of day-to-day loans by the chartered banks to enable the dealers to carry an inventory of Treasury bills. The

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(23) In order that the securities can be released for delivery to the Bank of Canada, the loan from the chartered bank to the dealer must first be repaid. To effect repayment the dealer requires temporary accommodation by way of a "daylight overdraft". This is created upon issuance by the dealer of a cheque drawn on and certified, without charge, by the chartered bank itself. The proceeds of the cheque are applied against the day-to-day loan, thereby releasing the securities held as collateral. These securities are sold by the dealer to the Bank of Canada under a sale and repurchase agreement, the proceeds of the sale then being used to retire the "daylight overdraft" at the chartered bank.

tapping of chartered bank cash (24) for this purpose necessarily involved some revision of view with regard to the appropriate level of cash reserves that should now be maintained by the banks.

Prior to the revisions of the *Bank Act*, which became effective on July 1, 1954, the chartered banks were required to maintain on a daily basis a minimum cash ratio of 5 per cent of their total deposits (25), including their time and savings accounts. In fact, the banks often held reserves amounting to 10 per cent or more of total deposits. In other words, they continued to maintain a cash ratio close to their "traditional" 10 per cent and at month-ends this was regularly exceeded. Since the Canadian banks typically have extensive branch systems, the levels both of their cash and deposits were subject to a wide variety of influences. Furthermore, numerous branches at widely scattered points made it quite impossible to calculate the amount of cash required to satisfy their minimum requirements and to make the adjustments necessary to maintain them at that level. The banks were frequently obliged to base their estimates on informed guesses and they therefore allowed themselves a sizeable margin to ensure that their reserves would always be adequate. In any event, the authorities appear to have approved of these arrangements and would no doubt have been greatly perturbed if the daily ratio had fallen close to 5 per cent.

In 1954, the required minimum was raised to 8 per cent (26), but this was now to be maintained on the basis of the month as a whole. The ratio was computed by taking the average of a chartered bank's Canadian deposit liabilities at the close of business on the four consecutive Wednesdays ending with the last Wednesday but one in the preceding month. To this was related the sum of the bank's holdings of Bank of Canada notes (calculated on a basis similar to that for deposits) and the average amount of the bank's deposit with the Bank of Canada "at the close of business on each

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(24) Chartered bank holdings of Bank of Canada notes, plus their deposits with the central bank.

(25) The cash ratio statutorily required for any one day was computed by relating the current daily cash figure to the daily average figure for deposit liabilities in the preceding month but one. In practice, the banks also watched their cash positions on a current basis as well.

(26) This might be increased, though only at intervals of a month, by steps of 1 per cent to a maximum of 12 per cent.

juridical day of the current month" (27). This made it possible for the banks temporarily to run down their cash provided they made it good later and maintained the required average minimum. In fact, the new arrangements left the banks with a certain amount of slack in their cash positions and, as they gradually brought their average cash ratios nearer to 8 per cent and accustomed themselves to working at a level close to the required minimum (a position they appear to have achieved by August 1955), they provided themselves with resources they could release to the dealers in the form of day-to-day loans.

One result of permitting the chartered banks to satisfy the required 8 per cent minimum cash ratio on the basis of the average for each month as a whole, with no carryover from one month to the next, is the tendency for easy money conditions to develop towards the end of the month. Thus, if the banks find by about the third week of the month that they are on average running above the required 8 per cent, for the remainder of the month they can afford to maintain their cash at slightly below 8 per cent and still achieve the required average for the whole period. In fact, no bank will wish to operate with too fine a margin and when money is very tight the banks are even less likely to risk running their cash down to minimum levels. Nevertheless, when money is relatively easy, it is not uncommon during the last few days of the month for money to be offered very freely in the day-to-day loan market as banks either individually or collectively endeavour to work down their average cash ratios to 8.1 or 8.2 per cent for the month as a whole. To the extent, therefore, that this influence operates, there is likely to be temporarily created an artificial condition of easy money, though no doubt the Bank of Canada will have attempted to cushion its impact by undertaking "smoothing out" operations (e.g. by placing less Government money with the chartered banks, or by selling securities from its own portfolio). However, to the extent that the chartered banks continue to behave in this way, it is probable that each such period of temporarily easy

(27) This formula was chosen, because it ensured that each bank would know when the month started exactly what its minimum average deposit at the Bank of Canada would have to be for that particular month. In addition, far less statistical work was required than with a formula based entirely on daily averages.

money will be followed by stringency in the early weeks of the next month, as the banks again begin to build up their average cash ratios in order to provide themselves with a margin of safety. Whenever such artificial ease or stringency develops the rates on day-to-day loans will tend to move in sympathy, so that in some degree changes in rates at these times will merely reflect the mechanics of adjusting chartered bank cash such that the minimum requirements are met when averaged over the month as a whole.

Towards the latter part of 1955, total chartered bank holdings of liquid assets — cash reserves, day-to-day loans and Treasury bills — fell to low levels as the result of a loan demand that remained persistently high. With a view to exercising a tighter control over bank lending, the Bank of Canada in November 1955 got the chartered banks to agree to maintain on a daily average basis a 15 per cent minimum ratio of liquid assets to deposits, including the mandatory 8 per cent in cash. During the first half of 1956, total holdings of such assets were gradually brought up to this level, mainly by buying Treasury bills from the proceeds of sales of Government bonds, and from June 1956 onwards the required ratio was in fact achieved on a daily average basis in each calendar month. The main objective appears to have been a more adequate control over the banks' commercial lending, but the method employed may also have been chosen as a means of ensuring that an appropriate amount of activity was maintained in the short-term money market, by requiring the banks to hold at least a minimum total amount of Treasury bills and day-to-day loans. In fact, during 1957, this minimum was regularly exceeded.

Day-to-day loans are made in minimum amounts of $100,000 against the security of Treasury bills and short-dated Government bonds (i.e. up to three years' maturity). Dealers that want to borrow day-to-day money ring up the banks to see whether they have money to lend. Likewise, a bank that wants to "call" a loan will telephone the dealer concerned. The banks may also wish to buy or sell Treasury bills, but it is not usual for enquiries relating to bills to be made at the same time as those concerning day-to-day money. As indicated earlier, if loans are to be "called" or repaid, this must be done by 12 noon, but new money may be lent up to the close of business at 3 p.m. Indeed, on a very busy day with funds coming in late, a bank may be lending up to 3.30 p.m.

Although it is not usual for the chartered banks themselves to fix formal limits for loans to individual dealers, it has been agreed that the total of a single dealer's day-to-day loans *plus* his borrowings from the central bank must not exceed his borrowing limit with the Bank of Canada, which ensures alternative sources of funds with which dealers may carry inventory of an approved maximum size. However, no limit applies to borrowings outside the banking system.

The lines of credit with the Bank of Canada must be renewed by the dealers each month. Occasionally, a dealer may secure a temporary increase in his limit. Thus, a dealer may find that he is holding more securities than he can conveniently carry and the Bank may agree to provide the necessary help subject to an undertaking by the dealer that he will cut his position to the required extent within a stipulated number of days. In the course of time, a dealer may feel that he needs a permanent increase in his limit and he may apply to the Bank in these terms, but the ultimate decision rests with the latter. For the dealers as a whole, the line of credit has already exceeded $150 million. The purpose of granting these limits was effectively to demonstrate how and to what extent the liquidity of the market would be ensured.

The dealers' lines of credit, it should be observed, have never been the subject of a written agreement. The arrangements between the dealers and the Bank of Canada are purely verbal, but without exception the dealers have consistently honoured their undertakings. Nevertheless, there has been some policing by the authorities. Every week (28), each dealer must report to the Bank of Canada the details of his inventory of Treasury bills and short-term Canada bonds, including anything he has outstanding against a repurchase agreement. In addition, the Bank will want to know the amount of the dealer's outstanding loans both from the chartered banks and from outside lenders, as well as his total turnover for the past week.

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(28) For purposes of convenience, half the dealers report on Wednesday afternoon and the rest on Thursday morning.

III

Since January 1953, the Ministry of Finance has called a tender for Treasury bills each week. Notice of the offering to be made is given a week in advance and only " primary distributors " are invited to participate. This means that in Canada the tender is restricted to the banks (including the Bank of Canada and the savings banks) and the dealers. Outside parties (such as non-financial corporations) are therefore obliged either to arrange for a bank or dealer to tender on their behalf (the actual tenderer usually deciding on the rate at which the bid will be put in) or to obtain their requirements in the market for issued bills. Nevertheless, the definition of " primary distributors " is wider than it might seem, since the dealers so included are numerically large (about 300) and not restricted to those that regularly " job " in bills. From January 1953 to November 1955, bills were issued for terms of 91 and 273 days. Over that period, therefore, there were 39 separate maturities of Treasury bills available for the investment of temporarily surplus cash resources and the parties concerned could select the maturity most appropriate to their needs without running a market risk of any kind. This step was taken at a time when the " outside " dealers (i.e. dealers other than the Bank of Canada) were not yet carrying an inventory of bills and efforts were being made to popularise their use by presenting as attractive a shop window as possible. As the public became more accustomed to them, the incentive of the larger number of maturities as well as a rate differential became less necessary and, in any case, the longer-dated Treasury bills never became really popular, this being primarily due to the increased availability of short-dated Government of Canada bonds, which were more suitable for short-term corporate investment because of their tax advantage (29). Gradually, the proportion of long-term bills issued was reduced — by increasing the amount of short bills offered and maintaining the weekly offer of 273-day bills at $10 million — and in November 1955 the offer of the latter was discontinued altogether.

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(29) A holder of short-term bonds only pays income tax on the interest therefrom. When such bonds have been selling at a discount (as they were for a period of over two years) the increment as a result of buying at a discount and holding the bonds until they were redeemed at par was classified as a capital gain and as such free of tax.

Although the Ministry of Finance issues the call for the Treasury bill tender, the Bank of Canada acts as its fiscal agent. Tenders are on a discount basis (30) and may be made either on the official application form or by prepaid telegram to the Audit Department of the Bank of Canada before noon on Thursday of every week (31). Before putting in his own tender, each dealer will try to find out what the others are doing, but there is no " syndicate " as in London and the authorities, which want all the competition they can get, would not welcome one, feeling that it would represent an expression of weakness. On occasion, a dealer or a bank may decide not to tender at all. Thus, when money is tight, the dealers will tend to cut their inventories to a minimum and will stay well within their credit lines for day-to-day loans, allowing most of the Treasury bill tender to go to the Bank of Canada. The chartered banks, too, especially at their year-end, may stay out of the tender in order to build up their liquidity and so make sure of not having to borrow at the Bank of Canada over the balance date.

Each tender submitted must be for an amount of $25,000 or multiples thereof (32), the price being stated per $100 to not more than three places of decimals. Most of the dealers and the banks " stagger " their bids, or put in what is called a " spread bracket ", i.e. they tender for various amounts at different prices. This is done to make sure that they get some bills and that they do not pay too much for them. While it may be difficult to pick successfully a single price, it is fairly easy to choose the right price range. A representative of the Ministry of Finance calls at the Bank to accept the tenders, which are sealed (including that of the Bank

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(30) Actually, price is based on present value rather than on simple discount, the formula being

$$\frac{100}{(1 + \text{interest}) \times \frac{\text{number of days}}{365}}$$

(31) The tender day is Wednesday when Friday is a holiday, Thursday then being the delivery day.

(32) The bills when issued are in bearer form and only in denominations of $25,000, $100,000 and $1,000,000. Dealers and banks must count both interest gains and trading profits as taxable income, from which they may deduct losses of any kind and costs such as interest charges on moneys borrowed for the purpose of carrying inventory. For bills in the hands of other individuals and corporations the difference between cost and selling price or proceeds at maturity is taxable income.

of Canada itself). The envelopes are then opened and the details tabulated, the allocation being made on the basis of the highest acceptable bids (i.e. the lowest yields). The Bank is responsible for advising tenderers whether they have been successful and for what amounts. It also announces the high and low tenders, and the average yield (33). Payment in full must be made to the Bank of Canada not later than 3.00 p.m. on Friday, the date of issue. Since payment for bills purchased is now made in clearing house funds, a paying bank will not lose cash through the clearing until the Monday (34). Provided arrangements were made at the time the tender was submitted, both payment for and delivery of the bills may be effected at any agency of the Bank of Canada, so that if a dealer wishes to have his bills delivered wholly or in part at (for example) Halifax or Vancouver this will be done.

The dealer starts trading as soon as he knows his allocation. First, he would telephone the banks, since they may have "missed" getting any bills at the tender, but be anxious to obtain some. In any event, the dealer will no doubt be interested to learn what he can about their position. The approach to the corporation treasurers usually comes later. On the Friday morning, the dealer must also arrange the day-to-day loans necessary to carry the bills he has secured.

The influence of the Bank of Canada's own tender (35) should not be overlooked. Indeed, the Bank's activities constitute the

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(33) It is important that successful bidders should know what the average rate is, in order to determine whether bills have been bought cheap or dear. Furthermore, new bills are offered to customers on the basis of the average price. If the dealer did not know what the average rate was, he might make less profit than he deserved.

(34) Prior to January 1957, Treasury bills were paid for in Bank of Canada funds, with the debit coming against the bank on the books of the Bank of Canada on the Friday, the same day as that bank received credit for the proceeds of maturing bills. This was one reason for the popularity of "pre-tender contracts", since bills bought from a dealer were settled in clearing house funds. Hence, a bank received the proceeds of maturing bills on the Friday, but would not have to face the loss of cash associated with new bills taken up on a pre-tender basis until the following Monday. In the absence of offsetting action by the authorities, this would have meant that for one working day the Bank of Canada would have been out of funds to an extent equivalent to the amounts owing by the banks on account of new bills bought by pre-tender contract. However, it recouped itself by drawing down in the normal proportions Government balances held with the chartered banks. Nevertheless, any bank that used extensively the pre-tender contract system could gain cash from the other banks for one day. Under the new arrangements, this is no longer possible.

(35) In addition to its ordinary bid, the Bank of Canada now always submits a "reserve bid", though it is under no obligation to do so. This is done "to guard against a

dominant factor in both the bill and the bond markets. Although it has no foreknowledge of the other bids, since all are sealed, it will have had access to a wide range of relevant information. Much of this is given to the Bank by the dealers themselves. Apart from the regular weekly return, they are not compelled to report either their positions or the transactions they are putting through, though the Bank may sometimes telephone them and ask them. However, they do in fact furnish quite a lot of unsolicited information, presumably out of a desire to be " co-operative ". Furthermore, Bank of Canada men at the " listening posts " in Toronto and Montreal (which are linked with Ottawa in a three-way hookup) are very quick to pick up information as a result of the types of enquiries made.

The dealers in their turn receive a certain amount of information from the Bank of Canada and to some extent they also exchange information amongst themselves. They learn little from the discreet comments that emerge from the " listening posts " in the course of their regular conversations with the dealers. However, the Bank of Canada publishes statistics that are of some value to them. Thus, on the Thursday morning (i.e. *before* the Treasury bill tender), the Bank of Canada issues its Statement as at the day before and this provides them with an overall view of the monetary position, though they will have to work out for themselves where the " pools " of money might lie. In addition, they will have seen the previous Friday the Weekly Money Market Statement and the Weekly Statement of the chartered banks' position, which is more or less in balance sheet form and relates to the figures for the week ending on the preceding Wednesday, though it must be admitted that these figures may by then have little more than an historical interest. At the same time, there is reason to believe that, particularly during the earlier stages of the experiment, the dealers might have used more expertly the statistical information made available to them. For example, it is not sufficient merely to look at the Bank of Canada's holdings of securities (as some of them were inclined to do), since changes in other asset and liability items

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situation in which the tenders of other bidders might not be for sufficient quantities to provide a market for the entire issue... This practice is known to the market and it ensures that no group, even if it were so inclined, could by boycotting the issue force a large increase in the interest rate on treasury bills ". (See Bank of Canada, *Annual Report*, 1956, p. 48).

may also reflect action taken to influence the level of the chartered banks' cash reserves.

Despite the strong position of the Bank of Canada at the Treasury bill tender, it must not be overlooked that in determining what quantity of bills it should aim at in the tender it may be influenced by considerations quite unlike those of the chartered banks or of the dealers. What the Bank decides to do at the tender must be consistent with its operations in the open market and with central bank policy as a whole. In its dealings in " old " bills, too, it will tend to reveal the direction in which its policies are moving. Although the Bank has never been known actually to refuse the bills offered for sale to it, it does from time to time demonstrate the degree to which it is a ready buyer or seller by widening (or narrowing) the margin between its bids and askeds (i.e. it reserves the right to quote its own price). In any event, the spread must be reasonably wide, otherwise there would be very little turnover in the market, because people would go to the Bank instead.

The Bank of Canada does much of its trading from the dealing room in Ottawa, but contact with the two main sections of the market is maintained through the Securities Department's representatives in Toronto and Montreal (36). Trading hours are from 10.00 a.m. to 3.30 p.m., but the dealers may trade amongst themselves until 5.00 or 5.30 p.m. (37). Hence, the first task of the Bank representatives at 10.00 a.m. is to establish the " run " of opening quotes, which will be in line with the market's closing quotes of the night before. These may well be different from the prices at which the Bank itself closed at 3.30 p.m. the previous day. Consequently, it is only after these initial enquiries have been made that Montreal and Toronto can get together with Ottawa on a three-way hookup and establish the rates at which they are prepared to do business. Although there is often little direct contact

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(36) The Bank's traders in these centres are not subject to the authority of the local agent. For large transactions, all final trading decisions are made by the dealing room in Ottawa, in consultation with one of the deputy governors who specialises on this side of the Bank's business. However, for small amounts — $100,000 to $500,000 — the local traders deal without prior reference to Ottawa, though they immediately report the transaction over the direct wire. Thus, the local traders are something more than mere " listening posts ", since they actually " close " most of the trades that take place between the market and the central bank.

(37) There is, in fact, very little inter-dealer trading in Treasury bills. Generally, such transactions are confined to securing a specific maturity for delivery.

with the New York money market, Ottawa will also have called their dealers there to see what New York's opening position is like (38). Trading can then begin and the desk will remain open for business all day until the Bank records its closing quotes at 3.30 p.m. Activity tends to be heaviest in the morning, but all through the day the Bank in Ottawa will be filling out the picture of the money position, the information coming in to it mainly from the dealers through its "listening posts" in Toronto and Montreal. It is on this basis that the Bank conducts its "smoothing out" operations with which it must continuously support any "policy" action it may from time to time decide to take.

IV

The main objective of introducing the money market experiment was to ensure the more efficient employment of short-term funds. Over a long period of years, the cash balances of the chartered banks had been subject to considerable fluctuations. For this reason, the banks became accustomed to work to a cash ratio which tended to be greatly in excess of the required 5 per cent of deposits. This provided a buffer to absorb the impact of sudden

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(38) At times, the Bank of Canada as agent for the Ministry of Finance will itself be the instrument of direct contact. For example, the Exchange Fund Account may have temporarily surplus funds to invest in New York and, in order to acquire U.S. Government securities, the Bank of Canada will need Federal funds (entitlements to balances with a Federal Reserve Bank) to pay for them. It is this type of mechanism that provides the bridge between the two markets. In addition, many Canadian dealers have offices in New York and the chartered banks (and the insurance companies) also move funds between the two centres. Longer-term rates will be subject to the influence of the not inconsiderable capital movements that over a period of years have taken place between the two countries and movements in these rates will have some effect on short rates as well. Capital movements have frequently been sufficiently large to completely swamp the more fundamental influence of the important trading connections between the two countries. At the same time, and especially since Canada adopted a floating rate for her dollar, the exchange risk (and, when it applies, the cost of forward cover) will be sufficient to explain not only why the rates in the two markets often diverge but also why they are sometimes found to move in opposite directions. One would expect developments in the United States to have only a lagged effect in Canadian markets, but this tends to be accentuated by the failure of operators to take the fullest possible advantage of the arbitrage profits that offer. Sometimes, the margins become quite wide without the market's stepping in to eliminate them. Ultimately, the markets do adjust, but at times there is quite a lag. This suggests that considerable inertia still remains, though as specialist expertise develops this should become less marked. Similar links exist with London, though these are much less well developed than with New York.

changes in their cash positions. However, this practice had two consequences: (i) it tended to create idle pools of cash in the hands of the banking system; and (ii) because of the variability of their cash holdings, the banks (and other financial institutions) responded only slowly to the attempts of the central bank to influence the distribution of their assets. By reducing the proportion of total assets actually held in cash and providing a mechanism whereby the banks could readily adjust their positions, it was hoped that the market would become more sensitive to central bank action.

The widening of the market — by increasing the number of issues dealt in and drawing in outside investors (such as the non-financial corporations) — was another means to the same end. The broader the market the more likely was it that securities could be readily realised without substantial loss (39), thereby adding to the liquidity of market paper. Again, such a market would provide the central bank with increased scope for operations in pursuit of its policies.

The problem was how to provide an appropriate mechanism. The key to a solution was found in the investment dealers, whose activities were concentrated mainly in the new issue and government bond markets. Here was a form of expertise that might be employed with advantage in fostering the growth of a short-term money market. Initially, they were encouraged to hold larger inventories of short-dated Government securities with the assistance of the Bank of Canada itself. As a result of this " training programme ", certain of the dealers emerged as candidates for the efficient employment of the day-to-day loans that the chartered banks were now requested to make to them for the purpose of carrying and placing what was to be an expanding issue of Treasury bills. This provided the banks with an outlet for their cash, which could now be lent overnight and called next day, besides ensuring an adequate supply of marketable and therefore highly liquid securities, viz. Treasury bills, in which any investor could employ funds for short periods, selecting from among a number of maturities that which would most nearly meet his needs.

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(39) Even so, fairly substantial losses may be incurred at times when the whole level of interest rates is moving upward and, indeed, it may well be an objective of central bank policy to discourage sales of securities by countenancing or even inducing such changes.

In the absence of this artificial stimulus, it is unlikely that Canada would have had a short-term money market for a long time to come. Even now, the market is still fairly small, but the progress made so far has been encouraging. At first, it was something of a hothouse plant, liberally fed with cheap money. Subsequently, it had to withstand the rigours of much tighter monetary conditions and rates increased in consequence. On a number of occasions, too, it was expensive to carry Treasury bills. This was especially true of the period March-August 1957, when more than once the margin between the yield on three-months Treasury bills and the rate on day-to-day money not only disappeared, but even became negative. Nevertheless, the total of Treasury bills outstanding, which was only $425 million at the end of January 1953 was first increased to $650 million (at which level it remained for over a year) and then expanded progressively at rates generally varying from $5 million to $15 million per week to $1,725 million in September 1956. Thereafter, there was some decline, followed by a period of stability at $1,625 million from March to mid-August 1957.

However, this only provides part of the picture. Such a large volume of bills could not have been successfully carried without a considerable increase in the holdings of the banking system (including the Bank of Canada). In part, this was due to the decision of the authorities requiring the chartered banks to maintain a 15 per cent liquid assets ratio, but it has been accompanied by a disquieting fall in the holdings of "other investors". At the same time, the volume of day-to-day loans (which is the basis of dealer activity) recovered somewhat during 1957, despite the difficult money position that obtained for most of the year. The greater reliance of the dealers on day-to-day loans from the chartered banks may have been a consequence of the change in the method of fixing Bank rate introduced in November 1956. Previously, the Bank of Canada had followed the practice of fixing Bank rate from time to time at a level that would generally be in excess of the Treasury bill rate.

The underlying philosophy was that general monetary conditions should be influenced by action taken in the open market. Necessarily, this would have effects on interest rates, but the Bank was not concerned to attempt the imposition of a specific structure of rates; relationships between rates were to be established by the

working out of market forces. At the same time, since the Bank was the lender of last resort, it was obvious that Bank rate could not for long be as low as the interest rate on the most liquid form of security in the market, viz., Treasury bills. For if the Treasury bill rate were to rise above Bank rate for any length of time, so that the cost of borrowing from the Bank was less than the return on Treasury bills, there would be an incentive to rely on central bank accommodation in order to carry Treasury bills rather than to use money market facilities. Hence, whenever the Treasury bill rate approached or temporarily exceeded Bank rate, the latter would be pushed up to restore the customary relationship.

" In 1956 the Bank Rate was increased from 2¾ per cent to 3 per cent on April 4th, to 3¼ per cent on August 9th and to 3½ per cent on October 17th. This procedure gave rise to some misunderstanding; in some quarters it was apparently thought that the central bank was setting or fixing or controlling interest rates of all kinds by its action in changing and publishing its own minimum lending rate " (40).

This the Bank of Canada was concerned to deny. It agreed that its day-to-day operations, including its loans to banks and to money market dealers would have an influence on the level of interest rates, but " generally in the direction of resisting rather than inducing or adding to movements of interest rates. In other words the Bank will normally be buying government securities on a declining market and selling on a rising market.

" In its day-to-day operations the Bank generally offers some resistance to changes in interest rates (in either direction) in the interests of maintaining orderly conditions in financial markets. However the Bank has always made it quite clear that the establishment or maintenance of any particular level of interest rates is not an objective of central bank policy. Its basic objective, as laid down by statute, is to manage the supply of money, that is, the total amount of currency and bank deposits, with a view to contributing both to economic growth and to general stability of prices " (41).

During the most recent period of tight money, the Bank of Canada apparently took no positive action to achieve greater string-

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(40) See Bank of Canada, *Annual Report*, 1956, p. 45.
(41) *Ibid.*, p. 49.

ency. It was content to allow the very strong demand for funds that had developed virtually to exercise its full effect on the rate structure. Only relatively small increases in cash reserves were permitted and banks and other financial institutions were therefore obliged to reduce their holdings of securities, thus forcing down bond prices and reducing yields. As a result of the method of fixing Bank rate adopted in November 1956, such that Bank rate would always exceed by ¼ per cent the average rate on 91-day Treasury bills at the most recent tender, the cost of borrowing at the central bank moved steadily upward in sympathy with the bill rate until Bank rate reached a peak of 4.33 per cent in the third week of August 1957. The chartered banks' interest rate on prime commercial credits was also raised at intervals from 5 per cent to 5¾ per cent, the latter rate becoming effective on August 26, 1957 — it could not go much higher, since the maximum rate that banks can legally charge on their loans is 6 per cent. Member firms of Canadian stock exchanges also announced a related increase in their rates on customers' " margin accounts ".

Meanwhile, there were signs that the remarkable expansion that Canada had been experiencing over the previous two years was beginning to level out. To an important extent, this was due to a falling off in the demand for several of Canada's basic exports, such as wheat, lumber and wood products, copper, aluminium and oil, though it was expected that the decline in the external value of the Canadian dollar together with the easing of the credit situation across the border would help to improve the country's balance of trade with the United States. Internally, there was some running down of inventories, a fall in profits, an appreciable weakening in stock market prices, and an increasing concern about the prospects of heavier unemployment during the seasonally slack months of winter. It was this combination of factors that prompted an unobtrusive easing of monetary policy in the closing months of 1957. A fall in the yield on Government bonds had begun in late August, but at first this was attributed to the central bank's normal habit of preparing the way for a refunding operation. This was completed on October 1. Only then did the market begin to realise that a cautious easing of monetary conditions was in progress, since the Bank of Canada now made no effort to withdraw the additional money it had created. Indeed, it may be argued that it was the new technique of tying Bank rate to movements in the three-months

Treasury bill rate that effectively masked the changed direction of policy.

In a period of uncertainty, it was conceivable that this slowness of reaction (42) was advantageous, since there was always the possibility that the levelling off might only be temporary and that it would be followed by a resurgence of inflationary pressures. Nevertheless, a gradual easing could still have been effected by open market action, *supported* at the appropriate time by a clear signal to that effect in the form of an old-style cut in Bank rate. In other words, it may well be that the Bank's present techniques of monetary control have become over-sophisticated and that an attempt to educate the public in the significance of less frequent changes in Bank rate would have been more rewarding than merely resorting to semi-automation. Despite much current scepticism, changes in Bank rate can still exercise a most potent shock effect and have the additional merit of unequivocally indicating to the public at large any radical alteration in the direction of policy, as distinct from short-term aberrations within the money market itself. Indeed, it would seem that the techniques of credit control presently being favoured in Canada are only likely to be understood by the monetary specialists and, as we have seen, even they can at times be deceived.

V

When the new money market arrangements were first established, it was hoped that there would be a considerable widening of the market for Treasury bills in Canada and, in fact, that has been achieved. Since the middle of 1954, when the day-to-day loan was introduced, the volume of Treasury bills outstanding has been increased about two and one half times. Moreover, the Canadian money market has already demonstrated its ability to function effectively under conditions of varying degrees of monetary tightness. In addition to their relations with the banks, the dealers have also built up connections with non-bank lenders (e.g. business corporations) and, in a number of instances, these, too, have provided important sources of funds with which to carry inventory. To

(42) *E.g.* the chartered banks did not reduce the prime rate on their loans until the beginning of December 1957.

some extent, it is true, these non-bank loans to the money market have had the effect of diverting funds from corporation deposits with the banks and this was encouraged by the somewhat inflexible rate structure that was formerly applied to such deposits. Ultimately, the banks were obliged to take defensive action and, after December 1955, they therefore geared their rates on special fixed deposits to the most recent average weekly Treasury bill tender rate.

One of the chief limitations to the continued growth of the money market was the general application by the banks of an over-certification charge. For specifically money market transactions, this was abandoned in March 1957. Although the banks thereby lost a useful source of revenue, the elimination of this cost to dealers has led to the development of a much more flexible structure of short-term interest rates and to an increase in the turnover of dealer business, though the extent of the latter is not fully reflected in the published statistics.

Although the market has amply demonstrated its capacity to carry a larger volume of Treasury bills, there has more recently been a marked shift of emphasis in the distribution of Treasury bill holdings. In the earlier years, a significant proportion of the increase in the Treasury bill issue was absorbed by business corporations with surplus funds to invest. After March 1956, however, the demand from this source began to decline. This was no doubt mainly due to the tax advantage that corporations could obtain by placing their funds in short-term Government of Canada bonds rather than in Treasury bills. In addition, corporation treasurers also began to buy larger amounts of finance company paper as well as the notes of other corporations. Hence, more and more of the Treasury bills outstanding came to be held by the banking system. This is only partly to be explained in terms of the minimum liquid assets ratio that the chartered banks are now required to maintain and which they have consistently exceeded on a daily average basis since June 1956. Indeed, it appears that the banks have latterly been using the Treasury bill market to quite a significant extent as an alternative to day-to-day loans whenever the demand for the latter has been inadequate to absorb the funds available, or rates have not been sufficiently attractive. As a corollary, the banks have been employing the services of the dealers to a greater extent than heretofore in obtaining the Treasury bills that they require for their portfolios. This would suggest that the main market for Treasury

bills may come to depend primarily on a dealer-bank relationship, with business corporations supplying a larger proportion (probably on a buy-back basis) of the resources necessary to carry dealer inventories of bills and bonds.

In these circumstances, there may be a case for the eventual withdrawal of the chartered banks from the Treasury bill tender. At the moment, neither the banks nor the authorities appear to favour this move, believing that it is in the long-term interests of the market to foster as much competition as possible. Several of the banks also feel that they are able to get their bills more cheaply by putting in their own tenders rather than by buying bills subsequently from the dealers. Nevertheless, it is the view of the present writer that the withdrawal of the chartered banks from the Treasury bill tender would be the means both of further increasing turnover and of building up the strength of the market. If the tender were confined to the Bank of Canada and the dealers, a proportion of the latter might be expected to become specialists in money market transactions and, in the course of time, to develop a higher level of expertise than they possess at present. This should lead if not to cheaper services (since the turn on Treasury bill transactions is already very small) at least to the provision of a wider range of facilities (e.g. in terms of the choice of available maturities), which at the moment the Bank of Canada helps to provide.

There are also grounds for believing that such a change in tender arrangements would result in the dealers' carrying a larger inventory of bills, but this would not automatically follow. It would depend on the extent to which banks and other purchasers sought bills from the dealers immediately after the tender. However, if the banks in particular accustomed themselves to delaying their purchases of bills until these came closer to maturity, an increase in dealers' inventories would be inevitable. In these circumstances, too, the "turn" on bill transactions would cease to be the main factor in retaining dealer interest in the market. The dealers' chief source of income in this context would then become the margin between the yields on Treasury bills held in inventory and the rates of interest that had to be paid on moneys borrowed for the purpose of carrying them. Although this margin may at times be negative, earnings from this source should on the whole provide the dealers with more incentive to participate in the market than does the

difference between prices of bills at purchase and sale. Moreover, in addition to carrying the bills during the interim, the regular weekly issue of bills would result in the dealers' holding a related range of bill maturities. From these, purchasers could then choose whatever maturity best fitted in with their future commitments (e.g. at tax dates, or when outpayments were expected against mortgages). Furthermore, old bills because they are necessarily nearer to maturity are more liquid than new bills. Not only could the banks adjust more easily the run-off of bills maturing in their portfolios, but by holding a higher proportion of old bills they could effectively increase the liquidity even of their liquid assets. This would considerably add to their freedom of manoeuvre and enable them at all times to pursue flexible policies.

London J. S. G. Wilson

STATISTICAL APPENDIX

TABLE I

CANADIAN CHARTERED BANKS - CASH RESERVE RATIOS

Year	Jan. %	Feb. %	Mar. %	Apr. %	May %	June %	July %	Aug. %	Sept. %	Oct. %	Nov. %	Dec. %
1939 . . .	10.9	10.6	10.3	10.2	10.3	10.2	10.2	10.3	10.6	10.7	10.4	10.3
1945 . . .	11.5	11.3	11.3	11.7	11.3	11.6	11.4	11.6	11.2	11.3	11.2	11.5
1950 . . .	10.3	10.0	9.9	10.1	10.0	9.8	10.1	10.6	9.7	10.4	9.9	10.1
1951 . . .	10.2	9.4	9.8	10.0	9.8	10.0	10.4	10.3	10.5	10.4	11.0	10.9
1952 . . .	11.2	10.8	10.8	10.6	10.3	9.7	10.3	10.3	10.5	10-3	10.0	10.1
1953 . . .	10.8	10.7	10.5	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.0	10.2
1954 . . .	10.3	10.0	10.4	10.0	10.0	10.1	9.4	8.9	8.8	8.9	8.8	8.7
1955 . . .	8.9	8.7	8.6	8.5	8.4	8.3	8.4	8.3	8.2	8.3	8.3	8.2
1956 . . .	8.4	8.2	8.2	8.3	8.2	8.3	8.3	8.5	8.3	8.3	8.3	8.3
1957 . . .	8.2	8.2	8.2	8.2	8.2	8.2	8.1	8.3	8.3	8.3	8.2	8.2

Note - Figures prior to July 1954 are not strictly comparable with those that follow. For bases of calculation, see text.

TABLE II

CANADIAN CHARTERED BANKS - DAY-TO-DAY LOANS

(End of month)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Millions of Dollars											
1954 . . .	—	—	—	—	—	56	68	52	63	102	101	68
1955 . . .	47	92	69	99	116	95	109	90	44	86	54	81
1956 . . .	59	82	75	43	64	97	109	68	114	85	64	74
1957 . . .	86	101	162	105	125	95	81	110	125	121	176	

TABLE III

CANADIAN CHARTERED BANKS - RATIOS OF LIQUID ASSETS TO TOTAL CANADIAN DEPOSITS

Year	Jan. %	Feb. %	Mar. %	Apr. %	May %	June %	July %	Aug. %	Sept. %	Oct. %	Nov. %	Dec. %
1954 . . .	—	—	—	—	—	—	13.8	13.7	14.0	14.4	14.1	13.3
1955 . . .	13.5	14.0	13.8	13.3	13.7	13.6	13.3	13.1	12.4	12.2	11.7	12.4
1956 . . .	13.1	14.2	14.3	14.6	16.0	16.2	16.1	16.4	16.6	16.4	16.4	15.9
1957 . . .	16.2	17.1	17.1	16.6	16.6	16.7	16.4	16.5	17.5	17.3	17.1	17.2

Note - Prior to June 1956, these ratios are calculated on the basis of the average of Wednesdays. From June 1956 onwards, they are based on daily averages.

DISTRIBUTION OF HOLDINGS OF TREASURY BILLS TABLE IV
(par Value in Millions of Dollars)

Wednesdays	Bank of Canada	% of Total	Chartered Banks	% of Total	Other	% of Total	Total
1954							
July 28 . .	161	24.0	347	51.8	161	24.0	670
Aug. 25 . .	138	20.0	400	58.0	152	22.0	690
Sept. 29 . .	94	13.1	430	60.1	190	26.6	715
Oct. 27 . .	120	16.3	370	50.3	245	33.3	735
Nov. 24 . .	200	26.5	390	51.7	165	21.9	755
Dec. 29 . .	177	22.7	316	40.5	287	36.8	780
1955							
Jan. 26 . .	137	17.1	435	54.4	227	28.4	800
Feb. 23 . .	126	15.0	421	50.1	293	34.9	840
Mar. 30 . .	165	18.5	435	48.9	290	32.6	890
Apr. 27 . .	236	25.4	368	39.6	326	35.1	930
May 25 . .	196	20.2	424	43.7	350	36.1	970
June 29 . .	275	27.0	375	36.8	370	36.3	1,020
July 27 . .	282	26.9	407	38.8	361	34.4	1,050
Aug. 31 . .	242	22.5	419	39.0	414	38.5	1,075
Sept. 28 . .	251	22.9	364	33.2	480	43.8	1,095
Oct. 26 . .	303	26.5	317	27.7	525	45.9	1,145
Nov. 30 . .	303	25.9	328	28.0	539	46.1	1,170
Dec. 28 . .	264	21.9	416	34.5	525	43.6	1,205
1956							
Jan. 25 . .	234	18.4	480	37.6	561	44.0	1,275
Feb. 29 . .	341	23.8	564	39.4	525	36.7	1,430
Mar. 28 . .	444	28.2	573	36.4	558	35.4	1,575
Apr. 25 . .	336	20.5	727	44.3	577	35.2	1,640
May 30 . .	394	23.3	759	44.9	537	31.8	1,690
June 27 . .	465	27.5	795	47.0	430	25.4	1,690
July 25 . .	467	27.6	735	43.4	493	29.1	1,695
Aug. 29 . .	494	29.0	835	49.0	376	22.1	1,705
Sept. 26 . .	521	30.2	806	46.7	328	19.0	1,725
Oct. 31 . .	560	32.6	794	46.2	366	21.3	1,720
Nov. 28 . .	532	32.3	741	45.0	372	22.6	1,645
Dec. 26 . .	519	32.7	752	47.4	314	19.8	1,585
1957							
Jan. 30 . .	418	26.7	807	51.6	340	21.7	1,565
Feb. 27 . .	437	27.2	811	50.5	357	22.2	1,605
Mar. 27 . .	482	29.7	805	49.5	338	20.8	1,625
Apr. 24 . .	503	31.0	769	47.3	353	21.7	1,625
May 29 . .	474	29.2	814	50.1	337	20.7	1,625
June 26 . .	516	31.8	795	48.9	314	19.3	1,625
July 31 . .	505	31.1	797	49.0	322	19.8	1,625
Aug. 28 . .	549	33.6	819	50.1	267	16.3	1,635
Sept. 25 . .	461	27.9	926	56.0	268	16.2	1,655
Oct. 30 . .	538	32.5	795	48.0	322	19.5	1,655
Nov. 27 . .	460	28.0	808	49.1	377	22.9	1,645
Dec. 25 . .	472	29.0	798	49.1	355	21.9	1,625

Note - The sums of the detailed figures do not necessarily equal totals since the former have been rounded to the nearest million.

RATES ON DAY-TO-DAY LOANS AN

	Average of Daily Closing Rates (Week ending each Wednesday) %	Average Yield 3-Months Treasury Bills (on following Thursday) %	Average Yield 9-Months Treasury Bills (on following Thursday) %
1954			
July	1.31	1.45	1.76
	1.25	1.39	1.72
	1.08	1.33	1.62
	1.00	1.35	1.62
August	1.18	1.34	1.62
	1.13	1.33	1.62
	1.05	1.32	1.61
	1.00	1.30	1.59
September	1.00	1.26	1.58
	1.00	1.24	1.56
	1.00	1.21	1.50
	.92	1.19	1.43
	.88	1.16	1.42
October	1.05	1.13	1.40
	.91	1.10	1.37
	.93	1.18	1.39
	.93	1.30	1.55
November	.88	1.20	1.50
	.75	1.19*	1.46*
	.75	1.16	1.45
	.75	1.13	1.44
December	.88	1.11	1.43
	.75	1.10	1.40
	.75	1.08	1.35
	.75	1.07	1.35
	.75	1.06	1.34
1955			
January	.75	1.05	1.33
	.75	1.03	1.29
	.75	.98	1.24
	.68	.88	1.17
February	.54	.84	1.13
	.50	.78	1.10
	.62	.86	1.14
	.83	1.13	1.21
March	1.00	1.07	1.25
	1.05	1.16	1.37
	1.15	1.20	1.43
	.98	1.13	1.34
	.85	1.09	1.29

	Average of Daily Closing Rates (Week ending each Wednesday) %	Average Yield 3-Months Treasury Bills (on following Thursday) %	Average Yield 9-Months Treasury Bills (on following Thursday) %
1955			
April	.72	1.08*	1.35*
	1.04	1.28	1.53
	1.25	1.29	1.56
	.98	1.25	1.52
May	.74	1.20	1.49
	.54	1.22	1.52
	.79	1.25	1.56
	.94	1.30	1.61
June	.95	1.31	1.62
	1.00	1.32	1.61
	1.12	1.34	1.61
	1.15	1.41	1.69
	1.20	1.44	1.71
July	1.13	1.44	1.69
	1.13	1.42	1.69
	1.10	1.41	1.70
	1.08	1.43	1.72
August	1.20	1.55	1.82
	1.33	1.59	1.82
	1.18	1.57	1.82
	1.45	1.70	1.96
	1.53	1.70	1.95
September	1.28	1.72	1.99
	1.73	1.78	2.03
	1.63	1.82	2.07
	1.80	1.83	2.10
October	1.68	1.85	2.16
	1.84	2.06	2.35
	2.15	2.16	2.48
	2.13	2.20	—
November	2.10	2.19	—
	2.13	2.23*	2.56*
	2.13	2.33	2.72
	2.33	2.57	2.90
	2.25	2.58	—
December	2.53	2.64	—
	2.38	2.60	—
	2.40	2.57	—
	2.38	2.56	—

* Tenders received on the Wednesday in equivalent week.

AND TREASURY BILL YIELDS

TABLE V

	Average of Daily Closing Rates (Week ending each Wednesday) %	Average Yield 3-Months Treasury Bills (on following Thursday) %
1956		
January	2.47	2.59
	2.58	2.61
	2.58	2.57
	2.33	2.53
February	2.13	2.48
	2.20	2.49
	2.40	2.51
	2.48	2.52
	2.50	2.56
March	2.63	2.60
	2.63	2.62
	2.45	2.62
	2.58	2.64
April	2.56	2.77
	2.73	2.80
	2.63	2.86
	2.68	2.89
May	2.63	2.91
	2.63	2.90
	2.63	2.87
	2.69	2.78
	2.73	2.72
June	2.73	2.68
	2.80	2.67
	2.70	2.63
	2.48	2.52
July	2.28	2.40
	2.50	2.49
	2.65	2.57
	2.63	2.65
August	2.75	2.80
	2.83	2.97
	2.68	3.03
	2.50	3.00
	2.40	2.90
September	2.25	2.92
	2.80	3.05
	2.75	3.09
	2.88	3.16

	Average of Daily Closing Rates (Week ending each Wednesday) %	Average Yield 3-Months Treasury Bills (on following Thursday) %
1956		
October	2.80	3.21
	2.75	3.26
	2.90	3.34
	2.80	3.37
	2.90	3.34
November	2.75	3.33
	2.73	3.32
	3.05	3.44
	3.03	3.52
December	2.80	3.53
	3.15	3.59
	3.50	3.64
	3.25	3.67
1957		
January	3.25	3.65
	3.35	3.71
	3.40	3.72
	3.35	3.72
	3.00	3.70
February	3.25	3.72
	3.40	3.75
	3.70	3.81
	3.55	3.76
March	3.50	3.72
	3.75	3.73
	3.65	3.69
	3.70	3.70
April	3.55	3.69
	3.73	3.71
	3.75	3.73
	3.71	3.75
May	3.73	3.76
	3.80	3.78
	3.75	3.78
	3.72	3.76
	3.53	3.76
June	3.70	3.79
	3.85	3.79
	3.83	3.80
	3.83	3.81

	Average of Daily Closing Rates (Week ending each Wednesday) %	Average Yield 3-Months Treasury Bills (on following Thursday) %
1957		
July	3.69	3.81
	3.85	3.81
	3.75	3.81
	3.58	3.80
	3.75	3.81
August	3.88	3.92
	4.08	4.03
	4.00	4.08
	3.55	4.03
September	3.16	4.01
	3.20	4.00
	3.03	3.93
	2.45	3.80
October	2.95	3.84
	3.85	3.87
	3.81	3.88
	3.65	3.83
	3.60	3.80
November	3.65	3.79
	3.50	3.74
	3.38	3.51
	3.53	3.58
December	3.70	3.67
	3.75	3.67
	3.70	3.64
	3.25	3.62

Bank Rate or Forward Exchange Policy

1. The Dilemma of Bank Rate

The use of the interest rate weapon in defending the official exchange rate of a currency — the most striking instance of which was the putting up of British Bank rate from 5 to 7 per cent in September 1957 — is beset by a peculiar dilemma.

Pressure on an exchange rate may be of two main kinds. The first kind is exerted, as it were, on *current account*. A country's current visible and invisible payments may be out of equilibrium; as a result, the level of its foreign currency reserves may be changing rapidly, and if nothing else (e.g. the internal price level, or the level or direction of domestic demand) is adjusted, sooner or later the exchange rate must "give". Speculative anticipations of the exchange rate change may extend the trouble to the capital account, further accelerate the change in foreign currency reserves, and make remedial action all the more urgent. Two contemporary examples of such pressure, originating in the current account, are France, where the franc appeared, and to some observers still appears, to be overvalued relative to the level of domestic prices and demand, and Germany, where the opposite seems to be the case. Bank rate, though perhaps not foolproof, is an obvious weapon of defence against this kind of pressure, if only because, unlike fiscal policy, it can be applied without fuss and legislative delay.

The other kind of pressure originates in the *capital account*, and may involve transfers of long-term and of short-term funds. Long-term movements are largely bound up with developments overseas, and are hardly subject to domestic policy measures. International movements of short-term funds, on the other hand, may be more amenable to available means of control; they are the main subject of this paper. These movements, of course, are reflected in the level of the foreign currency reserves of the country

under pressure, and if the reserves are low and dwindling, this may itself reinforce the flight of funds. If the currency is widely held internationally, and if holders enjoy certain (formal or informal) rights of convertibility into other currencies (or if they can evade exchange control, for instance by commodity "shunting"), the foreign currency reserves may not prove adequate to satisfy their demands, and devaluation may be forced upon the country in question. Some observers felt that Britain's plight in July-September 1957 was an example of this second kind of pressure. The current account showed a surplus running at an annual rate of over £200 millions, but the flight from the pound sterling more than offset the current account surplus, causing the central gold and dollar reserves to fall at an alarming rate. The British authorities responded to the pressure by pushing Bank rate up to the almost unprecedented height of 7 per cent.

Bank rate, of course, reacts both on the level of domestic demand or prices (and hence on the balance of payments on current account), and on the international movements of mobile funds (and hence on the balance of payments on capital account). There may well be a connection between the international and the home front; the speculative pressure on capital account may be due to a belief that the apparent health of the current account will not last, the balance will soon swing into serious deficit and devaluation will follow. To dispel this belief, the authorities may wish to use Bank rate on the home front for additional strengthening of the current account, by slowing down Britain's rate of inflation. However, it has sometimes been argued that, as in February 1956, the purpose in September 1957 was merely to deal directly with the international front and arrest the outflow of funds on capital account by high short rates of interest in London.

Be that as it may, it is clear that cases may occur (and whether the most recent British case was one of them may be left an open question) where the authorities see no valid reason for cutting down home demand, feel no anxiety about the present and future balance of current payments, and regard speculative fears of devaluation as unfounded; and yet the strength of those fears, reflected in a flight into foreign currencies, forces them to take defensive action. This is when the Bank rate dilemma becomes painfully acute; for

Bank rate acts indiscriminately on both fronts, hitting the domestic economy even if it was not intended to do so (1).

If the officially pegged exchange rate of an at least partially convertible currency (such as the pound sterling) must be defended without the judicious pegging of the forward exchange rate, the dilemma seems to have no solution. If, however, the authorities are not obliged to confine their supporting operations to the spot market, but will operate on the forward market as well, a technique is available which should in many situations help to overcome the dilemma.

In dealing with the task and scope of forward exchange policy, it will be convenient to discuss the problem in specific British terms, if only because sterling offers the most obvious example; but the conclusions should *mutatis mutandis* be applicable to other currencies as well.

2. Simplifying Assumptions

For the sake of simpler exposition, only two currencies will be taken to exist, sterling and the dollar, the one under a cloud of speculative doubt, the other believed to be safe and stable in terms of all other stores of value. Accordingly, only two centres will be used in the analysis, " London " and " New York ", the latter being a shorthand symbol for the rest of the world. The difference between the Treasury bill rates in the two centres (e.g. 6½ - 3 = 3½ per cent) will be referred to as the " interest parity of the forward discount " on sterling (2). " The official spot rate " will simply mean its own parity, (i.e. $2.80), as we shall abstract from permitted fluctuations between the two " gold points ". I shall use only one forward rate, talking of it in the form of an annual rate of discount compared to the spot rate, and assuming that there is only one type of forward contract (i.e., for three months' delivery). The cost of transferring funds from one centre

(1) This dilemma has been noticed by " The Economist " at the time of the 1857 crisis: " The advance in the Bank rate of discount to 8% must *not be regarded* as an indication of any further pressure upon the money market for *domestic purposes*, but as a protection against a drain on our bullion ". (My italics). *The Economist*, October, 24, 1857. Domestic traders faced with scarcer and dearer money were unlikely to derive much comfort from the assurance that they " must not regard " the Bank rate move as having a domestic purpose!

(2) Though imprecise, this formula is adequate for the purposes of our argument.

to the other, and the brokerage cost of arranging forward cover (the spread between forward buying and selling rates) will not be taken into account.

3. « Positions »

Various sterling " positions " can be taken up by persons and firms with access to the spot and forward exchange market. Some of these are *speculative* in the sense that a change in the official spot rate (e.g. devaluation) would change the capital value of the position in terms of sterling; others represent *arbitrage* in the sense that they are hedged against changes in the spot rate. I shall classify these positions under: 1) Pure Speculation, 2) Leads and Lags, 3) Conversion of sterling balances, and 4) Arbitrage. The size of the speculative positions depends on the intensity of doubt felt by potential speculators about the future spot rate; as the case we are discussing rules out beliefs in the appreciation of sterling, stronger doubt will be taken as tantamount to a stronger expectation of devaluation.

I shall measure degrees of " doubt " by the forward exchange rate and the volume of speculative forward sterling positions at that rate; the wider the critical value of the forward discount needed to equate the speculative supply and demand of forward sterling (i.e. to reduce the speculative excess supply of forward sterling to nil), the higher is the degree of doubt. If the critical value of the forward rate is equal to the spot rate, there is complete confidence in sterling (doubt being of degree zero); while if the forward rate is at a premium, speculators must expect upvaluation relative to the dollar. There will be excess demand or supply of forward sterling according to whether the forward discount is wider or narrower than the critical value measuring doubt; and hence the market will fix the forward discount at its critical value *unless* there is arbitrage demand for forward sterling to match the speculative excess supply, or *vice versa*.

1) *Pure Speculation*. This class is meant to embrace all (short or long) positions in forward sterling not offset by a position of opposite sign in spot sterling. For instance, it includes the (short) sale of forward sterling with a view to the purchase of spot sterling

in 3 months' time (after the expected devaluation has taken place). This is popularly known as a " bear position ". But it is not different in its function from what are popularly called " commercial " forward positions, such as the forward sale of sterling by a foreign exporter to Britain in anticipation of future receipts of sterling. In both the " bear " and the " commercial " case, the sellers of forward sterling would gain in terms of sterling in the event of devaluation.

If sterling is not devalued before the forward contract matures, the sellers lose the discount at which they sold forward; and the converse is true of the buyers of forward sterling. Thus the forward discount is the deterrent to short sales; and at any given degree of doubt, the size of the net speculative position in forward sterling should respond to the width of the forward discount. But since devaluations, when they do happen, usually involve big jumps in the official spot rate and hence big gains to short sellers, a change in the forward discount of, say, 1 per cent per annum is unlikely greatly to deter those who expect devaluation. Once doubt reaches a significant degree, big changes in the forward discount may be required to produce even relatively small changes in speculative forward positions; in other words, the responsiveness of Pure Speculation to the forward rate may be fairly low.

This kind of speculation is often blamed for the troubles of sterling, though of course it has no *direct* effect on the level of the gold and dollar reserves. However, it determines, through its effect on the forward discount, the profitability of interest Arbitrage, and hence it *indirectly* affects the reserves. I shall have to say more about this in later sections.

2) *Leads and Lags.* These amount to a delaying of commercial payments to, and their speeding up from, the country whose currency is under doubt. But here again, the role of commercial payments is merely to furnish the occasion for speculation. Basically, the " lag " in payments represents the borrowing of funds in sterling and their lending in dollars. Such a " swap " is or is not attractive regardless of whether it is coupled with a commercial transaction. The reason why it must normally be so coupled lies in exchange control. Funds raised in London cannot easily be converted into dollars and moved to New York for purposes not approved by the authorities. But British goods can be exported

unhampered by the fence of exchange control. The sterling debt created by their movement is then left unsettled (or settled with the proceeds of borrowing in London), while their dollar proceeds are lent or otherwise used abroad. Without exchange control, the same phenomenon could appear in the guise of a straightforward capital movement, independently of lags between foreign trade shipments and their settlements. Its effect on the reserves would be the same in either case, as both cases imply a transfer of dollars from the "weak" centre (London) to the "strong" one (New York).

Devaluation would reduce the dollar value of the unsettled debt in London or, which is the same thing, increase the sterling value of the credit built up in New York; and this, of course, is the expected profit from Lagging. On the other hand, to pay interest in London and receive interest in New York involves a current running loss if the London rate of interest is higher; and this interest differential is the cost of Lagging. Presumably, the wider the interest differential, the smaller will be the total Lag at any given degree of doubt. However, the responsiveness of the volume of Lagging to changes in the interest differential is likely to be fairly low for the same reason as the responsiveness of Pure Speculation to changes in the forward discount may be low.

If the London-New York interest differential is greater than the forward discount on sterling, it is more costly to engage in Lagging than in Pure Speculation. Since Pure Speculation does not involve a direct loss of dollar reserves, while Lagging does, there seems to be a case for keeping the forward discount above its own interest parity, in order to guide speculators away from Lagging and into Pure Speculation.

However, this case is not a very strong one, for Lagging and Pure Speculation are not mutually exclusive alternatives; more of the one need not mean less of the other. If, upon a narrowing of the forward discount above interest parity, it becomes cheaper to sell forward sterling short, "laggards" may do so *without* reducing their Lagging. Thus it would be rash to base policy on this effect alone; let us merely bear in mind that by virtue of Pure Speculation as an available alternative, Lagging may be responsive to the forward discount *as well* as to the interest differential, though neither responsiveness is likely to be very high.

3) *Conversion of Sterling Balances.* Two types of Conversion are of major importance for sterling. The first is into goods and services. For instance, India may finance her balance-of-payments deficit by running down her sterling balances. She is doing so primarily because of her own desires for industrial development, necessitating higher domestic investment than would be consistent with domestic savings. In other words, she is not doing so *because* of her fears of sterling devaluation; the movement is not speculative, and there is not much that British economic policy can do about it either by Bank rate or by other means. It is, as it were, a long-term loss which must in any case be borne by the gold and dollar reserves.

The other main type of Conversion is that of sterling into other currency balances — in our simplified system, into dollars. In this case, the holder of sterling still wishes to have a given liquid balance, but decides not to keep it in sterling. The incentive to switch into dollars is primarily speculative; upon devaluation, a given balance kept in dollars will increase in terms of sterling. Since "resident" sterling enjoys no formal or informal convertibility rights on capital account, the problem is mainly confined to transferable sterling. An amount in the region of £500 millions is held by banks, firms and persons in Transferable Account countries, chiefly as working balances, and this sterling enjoys informal rights of convertibility. It can be converted into dollars either *via* commodity "shunting", or with the direct assistance of the British authorities who support the transferable spot rate in order to forestall commodity "shunting".

But the conversion of these balances is not a *permanent* loss to the reserves. It should last only so long as doubt lasts. The holders are switching out of sterling because of their doubts about the official spot rate. Normally, they hold sterling so as to save the dealing "turns" (the differences between selling and buying rates of exchange) which they would have to pay when making sterling transactions out of a working balance kept in dollars. These dealing turns are the cost of staying out of sterling. If their doubt about sterling is dispelled, (e.g. by devaluation, or by a recovery of Britain's dollar reserves), they would presumably switch back into sterling.

Some former holders of sterling, foreseeing the need to do so, may in fact be buying forward sterling (thereby strengthening

the demand side of Pure Speculation) if the forward discount is wide enough to attract them, rather than wait in the uncertain belief that spot sterling may be made even more attractive by devaluation. For those keeping themselves short of spot sterling, a low forward rate represents an inducement to stay short (and go long of forward sterling instead), even if their expectation of devaluation is growing weaker. At the same time, if the London bill rate is higher than the New York one, Conversion represents a loss at least on those balances which are kept in bills or call money (though not on those which need be kept in cash). Thus, at any given degree of doubt, speculative Conversion of sterling balances will vary inversely with the London-New York interest differential, and directly with the forward discount on sterling (3). However, its responsiveness to either will probably be low.

4) *Arbitrage*. In contrast to the various speculative positions discussed above, Arbitrage is an existing position in spot sterling hedged by a position of opposite sign in forward sterling, so that no capital gain or loss can arise upon any change in the official spot rate. Arbitrage, of course, is undertaken in response to a divergence between the forward discount and its own interest parity. If the forward discount is wider than the London-New York interest differential, it pays to move funds from London to New York because the loss on interest is more than offset by the gain on buying cheap sterling forward — and *vice versa*, it pays to move funds from New York to London if the forward discount is narrower than interest parity. Looking at it from the London point of view, the former can be called "outward" and the latter "inward" Arbitrage.

However, simple "outward" Arbitrage is virtually prevented by exchange control. Nevertheless, as in the case of Lagging, it may escape through exchange control if it is coupled with an approved commercial transaction. The creation of a London debt and a New York credit (by Lagging), combined with the purchase of forward sterling at a discount greater than the interest differential

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(3) It will also vary with the present spot transferable sterling rate relative to its range of permitted fluctuation (*i.e.* between the anti-shunting "floor" and the official "ceiling"), a low transferable rate being a deterrent to Conversion because of the chance that it may rise.

lost in the " swap ", might suggestively be termed Hedged Lagging. It fulfils the same function as would be performed by undisguised " outward " Arbitrage, and it is just as harmful for the reserves as speculative Lagging would be. In conjunction with the Bank rate rise in September 1957, the authorities attempted to control both by restricting the use of short-term London borrowing facilities by non-residents. Such control increases " friction ", but it can never be quite effective so long as the forward discount offers a riskless profit to outward Arbitrage.

" Inward " Arbitrage, the shifting of New York funds to London combined with a sale of forward sterling, is the modern equivalent of the classical gold standard mechanism. When, as in the late XIXth century, no doubt was ever felt about the sanctity of the gold parity of sterling, a small rise in Bank rate sufficed to draw large funds to London. Reputedly, Goschen thought that an extra 2 per cent would draw gold from the Moon! Today, however, really large international funds will not move merely in response to interest differentials, as their administrators do not wish to be responsible for exchange risk (4). The yield which does induce their movement is the net extra interest after reduction of the cost of insurance — the cost of insurance being the discount on forward sterling. (A positive-gross-interest differential combined with a forward discount narrower than interest parity is, of course, fully equivalent for arbitrage purposes to a negative-gross-interest differential combined with a forward premium greater than interest parity).

As Arbitrage is riskless, its responsiveness to the extra net yield is, at first, likely to be extremely high. A small rise in the forward sterling rate, lifting it from just below interest parity to just above it, should transform a large outflow (Hedged Lagging) into a large inflow (Inward Arbitrage) of dollars into the reserves. However, after the most mobile international funds have moved, any further inflow may require a successively narrower forward discount relative to interest parity, as a higher reward is needed to overcome the inertia of holders who do not habitually look for very fine yield differences.

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(4) Note the recent public statement by Herr Hermann J. Abs, head of the Deutsche Bank, that the placing of German funds in London is still " severely handicapped " by the width of the forward discount on sterling. *The Financial Times*, 4th December, 1957.

4. The Forward Rate and the Level of Reserves

As we have seen, doubt about sterling induces Lagging and Conversion, and hence may depress the gold and dollar reserves below what is regarded as a safe level. Arbitrage does not depend on confidence in sterling, but it depends on the forward rate. According to whether the forward rate is above or below its interest parity, Arbitrage will be inward or outward, either offsetting the speculative loss of reserves, or further aggravating it. The forward rate, in turn, depends primarily on what I termed Pure Speculation. If doubt about sterling is strong, a low forward rate will be established in the market under pressure of the excess supply of forward sterling, and thus Outward Arbitrage may develop. The resulting loss of reserves may further increase doubt, Lagging and Conversion may be intensified, and so on in a cumulative way.

This may develop into a vicious circle. That it is at least a real danger is shown by the British experience in July-September 1957. During that critical period, the forward discount against the dollar (not to speak of the discount against the mark) reached widths of 6-7 per cent compared to a London-New York interest parity of barely 1 per cent; and even when the violent jump in British Bank rate increased the interest parity to over 3 per cent, the forward discount remained wide enough to render Inward Arbitrage unprofitable, *and* leave Outward Arbitrage profitable. Not until November and the reduction in the Federal Reserve System's rediscount rate did the forward discount eventually narrow to its interest parity. The British reserves had to weather the worst period before and just after the rise in Bank rate without the aid of mobile funds from abroad.

5. How Effective is the Bank Rate Weapon?

A rise in Bank Rate may, with luck, dispel doubt about sterling, and then all will be well again on the external front, though at the cost of undesired disturbance to the home front. The main incentive for speculative Lagging and Conversion will be reduced or might disappear altogether, while a higher forward rate will presumably suffice to equilibrate the demand and supply of forward sterling due to less adverse Pure Speculation; and the

combination of a narrower forward discount and a wider interest parity (due to the higher Bank rate) should succeed in tipping the balance of incentive in favour of Inward Arbitrage.

However, there is no certainty, nor even a strong likelihood, that a rise of Bank rate will in fact dispel or even reduce doubt. Its effect in this regard depends solely on the way potential speculators choose to interpret the move. If they interpret it as a sign of firm determination not to devalue, their confidence may be restored. But if they regard it as a desperate last-ditch defence after which only devaluation can follow, the raising of Bank rate may actually heighten the speculative fever. Which way the balance of opinion will swing in a given situation cannot be predicted *a priori*, and it would be most unsafe to take it for granted that Bank rate *will* reestablish confidence. Its effectiveness in altering speculative opinion in the desired way is rather a hit-or-miss matter.

Admittedly, Bank rate cannot fail to exert an influence through the widening of the London-New York interest differential which its rise implies. But this influence is likely to be small for various reasons. Firstly, as argued above, the responsiveness of both Lagging and Conversion to the interest differential is probably low, so that the reserves might not get much relief from that quarter upon the rise in Bank rate. Secondly, although the perilous excess of the forward discount over its interest parity may be wiped out as the latter is widened by the rise in the London bill rate, this alone does not ensure that Inward Arbitrage can reach significant dimensions. Inward Arbitrage is accompanied by a non-speculative excess *supply* of forward sterling. If there is only a *small* volume of speculative excess *demand* for forward sterling even at the new, wider interest parity of the forward discount, only a *small* volume of Inward Arbitrage can be accommodated with forward cover. And if the responsiveness of Pure Speculation to the forward rate is indeed low, little speculative excess demand for forward sterling may be engendered by a widening forward discount. The vicious circle is unlikely to be broken.

6. How Effective is the Forward Rate Weapon?

If private "speculators" are not ready to step in and absorb any excess supply of forward sterling offered by potential arbitra-

geurs, there is no good reason why the authorities should not be ready to do so. Their action would amount to the provision of insurance cover against a contingency (devaluation) which is largely under their own control.

So long as the international propensity for Arbitrage is not yet exhausted, any loss of reserves due to Lagging and Conversion can be fully compensated by attracting Arbitrage. This would be like a game of musical chairs; by Lagging and Conversion, private funds shift to New York and Britain's official reserves are reduced, while by Arbitrage, the same funds (though administered by a different set of people) can be drawn back to London and the official reserves restored.

This, as is obvious from the system of "positions" discussed above, can be achieved by fixing the forward sterling rate at a (slightly) narrower discount than its own interest parity, and then absorbing any excess supply forthcoming at that rate. The absorption can continue until the initial loss of reserves from Lagging and Conversion is compensated by Arbitrage, or until the authorities have some other reason for discouraging any further inflow.

The excess supply of forward sterling forthcoming at the rate so fixed will come from two sources: from the incoming arbitrageurs who wish to hedge, and from the "pure speculators" who may, on balance, also be net sellers of forward sterling at its supported rate.

Subject again to the propensity of the international financial community to engage in Arbitrage, there can be little room for controversy about the efficacy of forward exchange policy in eliminating Outward and attracting Inward Arbitrage. Unlike Bank rate, the forward exchange weapon is not aimed at, and its efficacy does not depend on, the restoration of confidence in sterling. It depends merely on the establishment of the right level of the forward discount, and on the willingness of the authorities to provide forward cover to all comers at that discount (5). Since the potential volume of Lagging at any one time is limited by the amount of commercial payments which *can* be delayed or speeded

(5) There is an analogy here with the willingness of the central bank to act as lender of last resort to all comers at discount fixed by itself.

up (6), and since the volume of Conversion is also limited by the stock of transferable sterling in existence, the possible maximum loss of reserves on these counts must be similarly limited. Therefore the task of compensating the loss by attracting Inward Arbitrage is likely to be manageable. Consequently, unlike Bank rate, forward exchange policy need not attempt to reduce speculative Lagging and Conversion; for it should be a matter of indifference to the authorities who happens to sit in which musical chair.

7. The Cost of Official Forward Operations

By acting as large-scale providers of forward cover (absorbers of excess supply of forward sterling), the authorities commit themselves to deliver dollars on a large scale when the forward contracts mature. However, the other contracting parties (pure speculators and arbitrageurs) also commit themselves; they must honour the contracts by delivering sterling to the authorities. If they do not already hold spot sterling, they must first obtain it; and they can only find extra sterling, over and above that already in private hands, if they buy it for dollars from the authorities at the prevailing official spot rate (7). If they already hold spot sterling, or will receive some by the time their forward contracts mature, they can of course deliver that to the authorities. However, by doing so, they are merely exercising a right they already possess (8); for both American account sterling and transferable sterling are convertible anyway on a spot basis. If the holders choose to convert it on a forward basis instead, the authorities will save dollars at the rate corresponding to the forward discount. This saving will be analogous to their dollar earnings from those pure speculators who sold forward sterling short *without* expecting to receive spot sterling by the time their contracts mature; these parties will have to

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(6) With proper control (*e.g.* with "sampling" by the Bank of England) of the quality of bills used to finance Leads and Lags, Lagging cannot exceed 3 months' foreign trade turnover, and its upper limit in reality is likely to be lower than that.

(7) Or at the spot rate for transferable sterling if the forward contract runs in terms of such sterling.

(8) Implicit here is the assumption that exchange control is no less effective in preventing the conversion of *resident* sterling into dollars on a forward than it is on a spot basis. This assumption could hardly fail to be true, for the authorities need not accept the delivery of resident sterling in satisfaction of their forward purchases.

buy sterling from the authorities at a higher (spot) rate than the (forward) rate at which they had agreed to sell it to them.

It is thus clear that by providing forward cover, the authorities do not assume any additional obligation over and above that which they must honour in any case. Any extra loss or gain can only arise from the difference between the spot and the forward sterling rate. If the forward rate is at a discount, and the spot rate is not devalued in the meantime, the difference is a gain to the authorities, and a loss to the sellers of forward sterling (9). This is what holders of spot sterling must pay for their hedges against devaluation, and what speculators against sterling must pay for their bets on devaluation. The authorities can quite cheerfully let themselves be paid for insuring spot holders against it, and for accepting speculators' bets on it, if they have no intention of devaluing before the expiry of the respective forward contracts.

On the other hand, the authorities do incur a cost with forward exchange policy in the sense that they virtually give up their freedom to devalue even if that should appear desirable after all. A downward adjustment of the spot rate would namely involve them in very heavy windfall losses (equal to the difference between the old forward rate and the new spot rate, over the aggregate volume of their forward sterling purchases).

8. Forward Exchange Policy and Confidence

In thus relinquishing their freedom to devalue the currency in the time span covered by their forward contracts, the authorities may well find that the logic of speculation helps them to turn weakness into strength. The use of Bank rate *would* leave them free to devalue. Therefore the choice of Bank rate in preference to forward exchange support *could* be a signal to speculators that the authorities are not altogether sure of their ability to resist the pressure without devaluation — and such a signal might well increase the prevailing doubts about sterling.

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(9) With a large-scale speculative attack on sterling, the authorities' dollar earnings from their forward support operations may well run into $5-$10 millions annually for each 1 per cent of the forward discount.

The use of forward exchange policy instead of Bank rate is, on the other hand, a fairly strong signal that the authorities *are* confident of their ability to resist pressure for at least the next three months (10). But if no devaluation can be reasonably expected for the next three months, then Pure Speculation, Lagging, and Conversion hold out no prospect of profit to compensate for their cost for that period. The sophisticated speculator should therefore suspend these activities, and need not resume them before he sees that the authorities have stopped supporting the forward sterling rate, and are preparing to " clear the decks " for devaluation. Actual devaluation could then conceivably follow when the bulk of the authorities' existing forward contracts have matured. However, by that time the recovery of the gold and dollar reserves (and the fall in the speculative excess supply of forward sterling) due to the abatement of speculation, may make the prospect of devaluation remote, and may itself remove the incentive for the resumption of speculation!

Thus, though forward exchange policy can be quite effective through Arbitrage alone, and need not depend on confidence in sterling, it may nevertheless, in a perhaps unexpected way, temporarily restore confidence just at the most critical time; and once restored, confidence may not again give way to doubt unless some new disturbance induces a new, independent wave of pressure.

Summary

1. If there is a speculative attack on a currency backed by inadequate reserves, a dilemma may arise in the use of defensive weapons of policy; for one such weapon, Bank rate, may induce a domestic contraction when no such contraction is desired.

2-3. The speculative attack takes two main forms; short forward sales of the currency in question (Pure Speculation), and the

(10) The only other possible meaning of the signal could be that the authorities are simply bluffing. But forward exchange policy, not based on a firm belief about their own powers to hold the official spot rate, would be a pointless and expensive bluff, which could, moreover, be very easily called.

actual flight of funds (Lagging and Conversion). Non-speculative interest Arbitrage, combining an actual movement of funds with a forward exchange contract in the opposite direction, may be either Outward, leading to additional gold losses, or Inward, offsetting the loss of reserves due to the speculative flight.

4. Pure Speculation determines the forward exchange rate, and hence the direction (Outward or Inward) which Arbitrage will take.

5. Bank rate works partly by determining the interest parity of the forward exchange rate, and partly by affecting (foreign) confidence in the currency. The latter effect is unpredictable and may swing either way. The former effect is likely to be very small unless Bank rate is changed with great violence.

6. Forward exchange policy works by supporting the forward rate at the level which will induce sufficient Inward Arbitrage to compensate for the speculative loss of reserves. This is likely to imply forward purchases of the currency both from arbitrageurs and from short sellers (speculators).

7. Such policy does not involve any additional risk for the reserves, for only such amounts of the currency can be converted into gold or dollars on a forward basis as could in any case be converted on a spot basis. Any conversion transacted on a forward basis will represent a saving of gold or dollars if the forward rate is at a discount compared to the spot rate.

8. The efficacy of supporting the forward rate does not depend on the restoration of confidence in the currency. However, massive intervention in the forward market is the strongest possible proof of official determination to maintain the spot rate unchanged. Therefore it is likely to affect speculative opinion in a more potent and predictable way than Bank rate.

Oxford A. E. Jasay

APPENDIX

Fig. 1, representing in a diagrammatic way a theory of the forward exchange rate underlying the foregoing exposition, may be found helpful in following the interaction of speculation and arbitrage.

The vertical axis measures the forward discount, expressing it as an annual rate of interest, compared to its own interest parity. At O, the forward discount is equal to the difference between the interest rate at home and abroad.

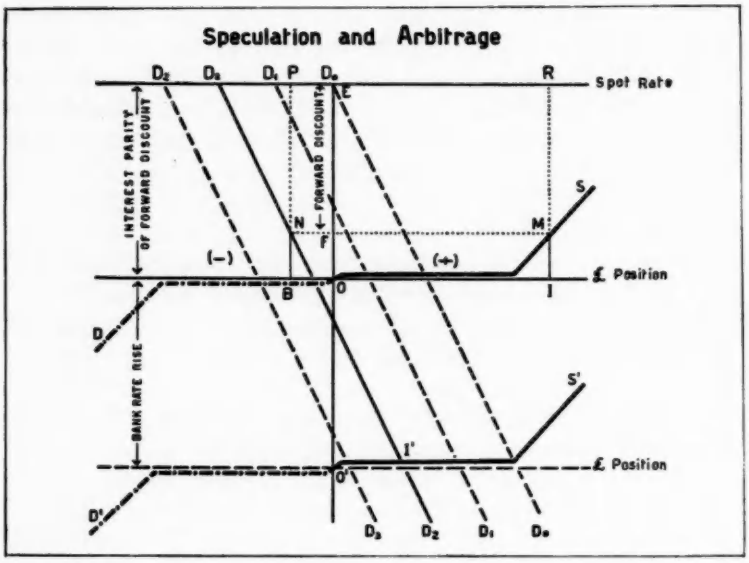

Fig. 1

At E, the forward rate is equal to the spot rate. Above E, it is at a premium. Thus the position of the horizontal axis relative to E reflects the home rate of interest compared to the foreign one; and a rise in Bank rate is represented by a downward shift of the horizontal axis from O to O'.

The horizontal axis is used simultaneously to measure the volume of both forward and spot exchange "positions". The curve OS depicts the schedule of Inward Arbitrage, which is assumed to be highly elastic with respect to an excess of interest parity over the forward discount at first, but to have diminishing elasticity after the most mobile funds available for arbitrage have already moved. OI is the stock of arbitrage money bought spot and sold forward, which has moved in from abroad in response to a forward rate of F. The curve

OD is the schedule of Outward Arbitrage, responding to an excess of the forward discount over its interest parity. (It is drawn in broken lines, because it may not represent a true schedule if Outward Arbitrage is made difficult by exchange control and refinancing restrictions). Both the *OS* and the *OD* curves are symmetrically reproduced in the form of an *O'S'* and *O'D'* curve, reflecting their downward shift if Bank rate is raised from *O* to *O'*.

The parallel *DD* lines are speculative excess demand schedules for forward sterling, each reflecting a given state of speculative expectation or "doubt". D_0D_0 reflects "zero doubt", and shows excess demand for forward sterling at any forward rate lower than the official spot rate. D_1D_1, D_2D_2 and D_3D_3 reflect increasing degrees of doubt, requiring increasing forward discounts to equate the speculative excess demand for forward sterling to nil. Assuming that D_2D_2 reflects the actual state of doubt, a forward rate of *F* would engender negative excess demand (excess supply) equal to *OB*.

If D_2D_2 remains the relevant speculative excess demand schedule throughout, a rise of Bank rate, expressed as a downward shift of the horizontal axis from *O* to *O'*, would render possible the influx of Arbitrage money to the extent of *O'I'*, as it is at *I'* that the speculative excess demand schedule for forward sterling intersects with the arbitrage excess supply schedule of forward sterling. The gold and dollar reserves would, of course, benefit to the same extent. If they had suffered a loss larger than *O'I'* due to Lagging and Conversion, and if this loss must be offset by Inward Arbitrage, then the required rise in Bank rate would also have to be larger.

Pegging the forward rate at *F* would imply a benefit to the reserves of *OI*, and official forward purchases of sterling equal to *BI*; *BO* from speculators and *OI* from arbitrageurs. If no devaluation took place before the maturity date of these forward contracts, such volume of forward purchases would result in official dollar earnings (and/or savings) equal to the rectangle *MNPR*. To maximise the area of the rectangle at a given Bank rate, the forward rate would have to be pegged at the level where the marginal supply price of forward sterling (offered by speculators and arbitrageurs) is equal to the official spot rate.

A. E. Jasay

The American Consumer: A Financial Portrait

In its 1956 annual report the Chairman of the President's Council of Economic Advisers remarked that it would be " ... desirable to increase the influence that the federal government can exercise on consumer credit ". In order to explore the matter more fully he requested the Federal Reserve Board to undertake a broad study of the role of consumer instalment credit in the economy. The results of this study were published in March 1957.

It is a study that is assured an honored place on the economist's bookshelf. Whether many readers will have the patience to plow through its more than 2,000 pages, and whether it will make it any easier for the President, or his Council of Economic Advisers, to form a judgment as to the desirability of consumer credit control is another matter. In fact, one who has read even a minor portion may be rendered incapable of action by the array of facts and opinions seemingly supporting all and any action he might, for other reasons, wish to take. Unfortunately, too, the Survey is not prefaced or concluded by any summary of findings. The Board of Governors, publishing its own conclusions two months after the Survey's publication simply stated that it did not anticipate consumer credit as turning into a major disturbing influence in the future and that special regulations were not now required.

Its main value thus does not lie in any conclusions the study draws nor any call for action. It draws few conclusions. It calls for no action. It is concerned with isolating and describing the anatomy and physiology of consumer credit, not with pathology and therapy. Anyone approaching it with the expectation of finding a document which deals in judgments and decisions is bound to be disappointed.

The press has generally taken a critical attitude of this deficiency. It has characterized the study as a mountain having given

birth to a mouse, its authors as timid, its conclusions as "conclusions". To this reader the verdict seems not only a little harsh, but also mistaken, unless one proceeds from the premise that from a wide array of statistics it must always be possible to draw a conclusion as to cause and effect in the past, and therefrom, in turn, a lesson as to policy in the future.

The staff of the Federal Reserve Board has indeed brought together a great mass of statistics, but, given the nature of economic development and its mechanism, it has for the most part been unable to isolate with sufficient clarity those events that can be causally related to occurrences in the consumer credit field. To illustrate: that credit expansion is a potential harbinger of economic instability we have always known. That consumer credit is one of the smaller components of total credit we have also known. The degree to which expansion in consumer credit has in the past been a factor in instability we would like to know, but the assembling of statistics has not furnished the answer. And so with many of the other questions raised. Perhaps the fault is less the cook's than the client's who ordered the dish.

Because of its nature, the study is most valuable for the insight it provides into the nature, growth and mechanism of consumer credit as it has come to exist in the United States today. Except to the specialist in consumer credit matters its spread is a revelation even to an American reader who himself has repeated occasion to partake in it. The following pages attempt to summarize the most significant features of consumer credit in the contemporary American scene.

1. *The volume of consumer credit.* By the end of 1956 consumer instalment credit outstanding had reached the all-time high of $31,500,000,000. It had climbed to that level from a modest $1,000,000,000 in the early 'twenties, interrupted by declines only during the Great Depression and during World War II. Its steepest rate of ascent began after World War II. From a low of $2,000,000,000 in 1944 it rose without interruption to $29,000,000,000 at the end of 1955. Its growth in 1955 alone was of the magnitude of $5,500,000,000 and was by itself largely responsible for drawing attention to the whole problem of consumer credit. To provide some comparisons, consumer instalment credit in 1956 amounted

to some 8% of gross national product. It represented nearly one-quarter of all consumer debt (62% of all consumer debt was mortgage debt).

2. *Objects of instalment debt.* In 1939, when total instalment credit was only $4,500,000,000, automobile credit, personal loans, and other consumer goods paper shared about equally in the volume. In 1955, automobile credit had run far ahead of the rest of the field: it accounted for almost half of the total, having increased ninefold, while the other types were at only four to six times their 1939 level. Even mortgage credit had expanded only 6½ times during the same period.

3. *The users of instalment credit.* In early 1956 almost half — to be exact: 45% — of all spending units (1) in the U.S. were carrying instalment debt. One out of every two American families — using the term as broadly equivalent to "spending unit" — was "paying off" the purchase of a car, a television set, a washing machine. As one would expect, the frequency of instalment debt was least at the extremes of income: only one in five households had instalment debt on the $1,000 per year income, and only one in three on the $10,000-plus per year level.

At the lower end, even instalment purchases of high-cost consumer goods are prohibitively expensive (and often not needed as these spending units may be single, older persons), whereas in the top income group cash payments impose no particular burden. It is in the medium income groups — $4,000-$7,500 per year — that instalment buying is most frequent. Here 56% of all spending units carry such debt. On the other hand, the amount owed increases with income and is highest in the $7,500-$10,000 group which owes, on the average, some $670, or a little less than 10% of annual income.

Many consumers, however, are carrying instalment debts that represent far larger shares of their disposable income. The extreme

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(1) A statistical concept indicating all related persons living together who pool their income. A family with children less than 18 years old is the typical "spending unit". But a family including a child aged 18 or over who earns at least $15/week and does not contribute his income to the family would be two spending units.

case is the family with an income of less than $1,000: in this category in which only 19% of the spending units carry instalment debt, almost half of these units carry an instalment debt equivalent to 40% of their disposable income. By contrast, only 1% of all spending units carrying instalment debt in the $7,500-10,000 income group have as high a proportion of their income tied up in instalment debt service.

There is also a definite correlation between age and instalment debt. The carrying of instalment debt is highest among the 25-34 year olds, i.e. the new families who are acquiring the durable consumer goods they consider essential in setting up a household. As high as 61% of the spending units in this age bracket carry instalment debt. By contrast, in the 55-64 year old group the percentage drops to 29. Both habit and need render instalment debt less frequent.

The use of instalment credit varies also with occupational status. Farmers are least apt to incur such debt — only 24% of them — possibly out of a conservative attitude towards debt in general. Among other occupations, the use of instalment debt is highest among skilled and semi-skilled workers of whom almost two-thirds carry such debt. Of those who do, however, over one-third commit less than 10% of their income to instalment debt payment.

The typical expenditure on durable consumer goods, excluding automobiles, covered by instalment credit in 1955 amounted to somewhere between $200 and $500 per family. Furniture was the leading item, followed by television sets, washing machines, refrigerators and cooking stoves.

4. *Automobile purchases.* Automobile ownership has been the nursery of instalment credit. It is its mainstay now. By the end of 1955 close to half of all outstanding instalment credit originated in automobile purchases. In order to appreciate the role of the automobile in the American consumer's budget one need only look at the statistics of ownership. In early 1956 even in the lowest income group — less than $1,000 a year — 28% of the families owned one car. In the top group — $10,000 and over — 62% owned one and 32% two or more cars; only 6% owned none. The following table shows ownership by income groups:

Annual Income (before taxes)	Percentage of spending units which			
	Owns 1 car	Owns 2 cars or more	Owns no car	Purchases on credit
Under $1,000	28	1	71	52
$ 1,000-1,999	38	3	59	63
$ 2,000-2,999	55	4	41	52
$ 3,000-3,999	64	6	30	69
$ 4,000-4,999	78	7	15	66
$ 5,000-7,499	78	11	11	65
$ 7,500-9,999	74	20	6	50
$10,000 and over	62	32	6	40

These figures indicate the vast impact of automobile purchases upon practically every phase of the economy. Their role in instalment credit is indicated by the fact that, except in the top income bracket, half or more are purchased on credit. In the medium income groups which comprise the bulk of the population, two-thirds of all automobile purchasers buy their cars on credit, and in 1955 one-third of all spending units in these brackets did, in fact, purchase a car.

5. *The lenders.* The kind of instalment paper that was outstanding at the end of 1955, by types of lenders, is shown in the following tabulation:

DISTRIBUTION OF CONSUMER INSTALMENT CREDIT, BY TYPE OF UNDERLYING TRANSACTION AND LENDER, DECEMBER 31, 1955
(in million dollars)

	Automobile paper	Other consumer goods	Repair and modernization of homes	Personal loans	Total
Total	*13,668*	*7,626*	*1,670*	*6,256*	*29,020*
Held by:					
Commercial banks	5,305	2,042	1,338	1,916	10,601
Sales finance companies	6,919	1,034	—	465	8,418
Consumer finance companies	—	—	—	2,155	2,155
Automobile dealers	535	—	—	—	535
Credit unions	—	—	—	1,019	1,019
Department stores	—	1,511	—	—	1,511
Other retail stores	—	2,533	—	—	2,533
Other financing institutions	709	506	332	701	2,248

As may be seen from the above table, commercial banks are today the biggest lenders in the consumer field. This has not always been the case, but is a recent development. Just prior to World War II commercial banks held only $1,700,000,000, or one-fourth of all consumer credit. In 1955 their holdings were approaching 40% of all outstanding consumer credit, and there is hardly a bank left in the United States that does not engage in consumer instalment lending.

Sales finance companies, the second-largest lender in the field, have had a chequered history. Preceding commercial banks by many years they suffered a severe setback during the depression years and again during World War II when their role was largely taken over by consumer finance (or small loan) companies which found it easier to make loans in the face of stringent credit regulations. At present sales finance companies hold almost 30% of all outstanding consumer credit.

Consumer finance companies which specialize in small loans, often unsecured, typically at high rates of interest, have held on to a steady 10% of the instalment credit market. According to a recent survey, the principal reason that brings borrowers to these companies is to consolidate miscellaneous overdue bills, i.e. to make a funding operation. Health expenses are the second-largest cause, accounting jointly with general funding for almost 50% of all loans. Automobile purchases, durable consumer goods and home repair are relatively unimportant. In a sense, most of the loans made from consumer finance companies represent special emergencies, cases of " overextension ".

	Total outstanding (*million dollars*)	Percentage held by				
		Commercial banks	Sales finance companies	Consumer finance companies	Other finance companies	Retail outlets
1941	6,085	28	30	9	7	26
1945	2,462	30	12	18	12	78
1948	8,996	39	22	9	9	21
1950	14,703	39	25	9	7	20
1953	23,005	39	26	9	8	18
1955	29,020	37	29	9	9	16

Retail stores have been a diminishing factor in the holding of consumer instalment credit. To an increasing degree, stores prefer to sell their paper to banks or finance companies rather than be saddled with the labor and expense of carrying the credit for their own account.

The following tabulation shows the relative role of the various lenders, from 1941 to 1955.

6. *The terms.* With the extension of consumer instalment credit to a growing group of consumers and list of goods has come a gradual easing of terms. Required down-payments have been reduced, maturities lengthened. Interest rates, on the other hand, have remained stable or have been raised.

In the case of automobiles the easing of terms has been spectacular. Between 1920 and 1955 length of maturities doubled. In the shorter period 1939-1955 it rose some 50%. The really big jump occurred in 1954 and 1955, as may be seen from the following:

PERCENTAGE OF ALL NEW AUTOMOBILE INSTALMENT CONTRACTS HAVING SPECIFIED MATURITY AND DOWN-PAYMENT RATIO

	1955		1954	
	2nd Half	1st Half	2nd Half	1st Half
Maturity (months):				
30 and over	66	57	48	34
36 and over	25	18	13	7
Down-payment ratio:				
Under 25%	48	41	38	30
Under 15%	19	17	14	9

As may be seen, in the average course of 18 months the percentage of cars being financed at 30 months and over doubled, and more than tripled for cars having a maturity of 36 months and over. At the same time, down-payment requirements were relaxed: 50% more cars were sold with only 25% or less, and over 100% more with a mere 15% down-payment. Statistics show that low down-payments and long maturity go together, thus creating a situation in which the financing charge adds a substantial

amount to the cost of the car and the total credit may exceed the dealer cost by as much as 25%. By now the typical automobile instalment purchase gives the buyer 30 months to pay, with a down-payment of about 25% of the price.

Banks usually insist on shorter maturities and require larger down-payments than do other lenders, but only when banks function as lenders to consumers. When banks purchase paper from other lenders, they accept, by and large, the terms set down by those agencies.

Appliance sales are usually even less stringent: 10% down-payment and maturities stretching 24-30 months and even 36 months on more expensive items are the rule.

7. *The cost of credit to the consumer.* Consumer credit is one of the most profitable lines a lender can engage in. Interest rates charged are by far the highest found in any type of lending. At the same time they encounter least resistance, since their significance is dulled by the seller's method of quoting the "monthly charge", in which the interest, merged with the cost of the purchase, not only loses its identity, but appears of relatively minor magnitude altogether. In fact, there are good reasons to believe that in the majority of instances the consumer is unaware of the rate of interest he pays or the amount of the carrying charge. (He is therefore equally insensitive to changes in the rate of interest).

To illustrate, if on a given purchase there remained an unpaid balance of $2,000, to be financed, this would be increased by, say, $35 for various types of insurance, and, at 6% per annum, over a two-year period, by $244.20 for interest, yielding a total of $2,279.20. The monthly payment would be computed at $94.96, including the financing charge. This, in most instances, is the figure on which the prospective buyer will focus and which will be at the root of his decision to buy or not to buy. What if the interest rate were to be 8% instead of 6%? His monthly payment would then rise to $98.33, i.e. by only $3.37, or by less than the price of a restaurant meal for two! Obviously, the rate of interest bothers only the most sophisticated purchaser.

It takes an equally erudite purchaser to realize that his 6% interest consists of an "add-on" charge — the term for the method of charging interest on the face value for the entire length of the

contract — and that he is therefore actually paying over 11% on the average amount outstanding during the life of the contract. This rate which is the rate at wich about half of all instalment purchases were financed in the spring of 1957 (with half of the remainder above and half below) compares with contemporary mortgage rates of 5-6%, 4½-5½% on bank loans to business, or 90-day acceptances at just over 3%.

Rates charged on personal loans made by consumer finance companies run even higher. Typically, these companies will charge 3% per month on the outstanding balance for the first $150 to $300 (varying from State to State) and less for larger amounts. They earn over 2% per month on such loans. Commercial banks engaging in personal loans are limited, by state laws, to much lower rates, but still ranging from 6½% to 9% per annum.

Even before the rise in the interest level, that began in 1955, rates charged to consumers were thus far more in line with what Americans generally have considered exorbitant rates of interest in many foreign countries, including those of Western Europe. But most American consumers would be ready to deny, in good faith, that on typical instalment contracts they are paying 11% and more.

8. *Cost to the lender.* The high rates of interest charged in the consumer credit field are directly related to the cost of financing. Interest cost, to the lender, is not the largest single cost element. Administrative costs, fixed and operating, are higher, and they are relatively higher the smaller the loan. With large volume, however, the significance of the fixed costs diminishes and consumer lending becomes highly profitable, more so on the whole than other types of banking and manufacturing.

Surprisingly, perhaps, the risk element in consumer lending is not especially high and losses are not the factor making for high cost, nor has there been any significant change in this picture over the past decade. The experience of commercial banks is that at any time no more than 1½% of all instalment paper outstanding will be delinquent from one to three months. For automobile loans made directly by banks to buyers, the rate is only half that, whereas it has in the past risen to over 2% for paper credit arising out of appliance sales. Net losses, on the basis of meagre data available, do not seem to exceed 1% in terms of total credit outstanding in any recent year.

9. *The new consumer.* The rapid growth in consumer credit has been made possible by the consumer's willingness to become a debtor and save *after* rather than *before* the purchase. It has been helped along by the willingness of lending agencies to assume the administrative burdens and possible financial risks connected with small-scale and atomized consumer lending against the prospects of high earnings. In back of both developments has been the continuous growth of the economy and with it the substitution of service-rendering capital assets for purchased services: the trend from rented apartments to home ownership, the concomitant growth of the suburbs with consequent increased needs for transportation, i.e. automobiles, increasing difficulty and expense of domestic help with the consequent spread of household appliances — dishwashers, laundry machines, lawn mowers, etc. — to replace hired labor. Finally, the replacement of outside entertainment by television. A statistical reflection of this development is presented below:

INDEXES OF SELECTED CONSUMER EXPENDITURES, 1955
(1929 = 100)

Total consumer expenditures	322
Household appliances	541
Interest on personal debt	585
User-operated transportation	489
Domestic service	195
Purchased local transportation	190
Admission to motion picture theatres	179
Laundering in establishments	205

The above data dramatically illustrate the changed consumption pattern that has developed during the past two decades: away from rented and purchased services, towards self-supply of services derived from owned durable assets. In this framework the extension of consumer credit appears not so much as an addition to but as a re-allocation of available resources.

What has happened to the consumer is that he has shouldered a growing burden of liabilities to acquire an increasing stock of non-liquid assets. In relative terms, the rise in liabilities has far outrun the rise in assets: compared to 1939 the consumer's total

assets in 1955 had risen by 261%, his liabilities by 408% (both measured against a combined rise in population and prices of roughly 150% over the same period). Within the asset group, automobiles have risen 564%, homes 361%, life insurance and pension assets 345%, all of them relatively non-liquid and most of them requiring regular service payments.

In the aggregate, nonetheless, total consumer liabilities are, of course, only a fraction of total assets (about one-eighth in 1955) and are 60% of total *liquid* assets. However, the aggregate picture is grossly misleading. Most of the liquid assets are held by debt-free consumers, with the result that for debt-carrying consumers alone liabilities exceed their liquid assets by some 50%. This is merely another aspect of the fact that liabilities are discharged largely out of current income. Nonetheless, if consumers-in-debt were a business concern, the excess of current liabilities over liquid assets would be considered precarious.

This precariousness emerges also from a study of the liquid assets held by spending units in various income groups, as shown below:

	Percentage of spending units in specified income group	Median annual income	Median liquid assets holding early 1956	
			All units	Holders only
All income groups . .	100	$ 3,960	$ 310	$ 800
Under $1,000 . . .	11	624	0	745
$ 1,000-1,999 . . .	12	1,480	0	860
$ 2,000-2,999 . . .	13	2,485	75	575
$ 3,000-3,999 . . .	14	3,500	200	600
$ 4,000-4,999 . . .	14	4,400	290	540
$ 5,000-7,499 . . .	22	5,950	600	740
$ 7,500-9,999 . . .	8	8,315	1,365	1,560
$10,000 and over . .	6	12,300	3,500	3,500

Two-thirds of all spending units, comprising all income groups below $5,000, carry liquid assets of less than 10% their annual income. On the other hand, when one omits those units holding no liquid assets, the percentage is both higher and apparently quite independent of income level, until one reaches the income group

of $7,500 and over. The comparison suggests a large number of spending units without any liquid assets other than the cash they keep (which is excluded from liquid assets). Again, in relation to consumer credit this indicates increased reliance on ability to pay for acquisition of assets, whose cost exceeds currently available income, out of future income rather than out of past accumulation of savings. It also suggests, however, a marked vulnerability of consumers to reduction in income, especially when not offset by social security, pensions or other payment schemes.

10. *The profitability of lending.* Consumer credit is expensive. As has been indicated above, costs of operation are high, largely because of the multiplicity of small transactions involved, the frequency of payments, investigations of credit worthiness, and, to some extent, the expectation of bad debt. Consumer credit companies do not rank especially high in the ratio of their profits to net worth, or, put differently, profits are not especially a reason why consumer credit is expensive.

The Federal Reserve Board study cites an interesting illustration: the collective experience of lenders under the Small Loan Act in the State of New York in 1954. The following table presents these data in a percentage breakdown:

	Percent	
Gross income per loan granted		100
Advertising	4	
Bad debts	8	
Rent, heat, light, services	4	
Salaries	26	
Telephone and telegraph	2	
All other expenses	12	
Total operating cost		55
Interest paid	16	
Total expenses		71
Income before taxes		29
Federal, state, and local taxes	21	
Net income after taxes		8

While the above picture is not necessarily typical of all, or even most, consumer credit agencies, it is perhaps surprising that in the field of small lenders which is loosely thought of as an area of large profits only 8 percent of income from lending represents net income to the company.

The profit situation varies, of course, with the source of funds, though the impact of the interest rate is limited by the moderate significance that the cost of money has in total costs. Except for the very smallest units, sales finance companies rely on short term debt financing for about half their funds.

It is commonly assumed that the risk in consumer lending, expressed in delinquent payments, losses, and repossessions is of a large order of magnitude. Statistics do not bear this out. From the data available the net loss of finance companies as a percentage of outstanding credit is certainly less than 1% and has been declining.

While these percentage figures are small in an absolute sense, it must, however, be remembered that control of losses is one of the few ways a finance company has to improve its earnings. Since a high percentage of its costs is fixed and the cost of money is a factor over which it has little if any control, the quality of its loans becomes a primary factor in the fortunes of a lender. A sound judgment of how much a risk is worth taking in order to attract a large enough volume of business emerges as one of the prime requisites of a successful consumer credit lender.

11. *Consumer credit versus economic stability.* On balance, and with a good many hesitations and qualifications, the Federal Reserve Board finds that consumer credit tends to promote economic instability. It comes to this verdict, if such one may call it, in 30 pages of heart-searching contemplation of a great many statistical series; its affirmative findings are far from overwhelming. They consist briefly of the following:

(a) Consumer instalment credit, though often a factor in business fluctuations, has not been found to be a principal cause.

(b) Consumer instalment credit seems to have preceded business upturns and downturns and to have amplified the swings.

(c) It appears to have boosted upswings more than it has aggravated downturns.

(d) Since consumer credit is a boom phenomenon, and since the savings required to make payments occur after the contraction of debt, consumer credit, by promoting savings after rather than before the purchase, aggravates cyclical swings.

(e) With the growing quantitative role of consumer credit its unstabilizing effects are likely to be increasingly felt.

Caught by the difficulty of statistical analysis — the near-impossibility to isolate consumer credit and its effect in the vast mass of financial statistics — this part of the Federal Reserve Board's survey, though at the heart of the problem, remains singularly unsatisfactory, so much so that the reader must question the priority of the empirical-statistical over the analytical approach, when statistical evidence is so spotty and unsatisfactory.

12. *Response of consumer credit to monetary policy.* In this area, too, central to the issues posed in the Survey as a whole, the findings are less conclusive than one would have hoped for. At the retail level, consumer borrowing has historically been highly insensitive to increases in the cost of borrowing, when these have taken the form of higher interest rates. Shorter maturities and larger down-payments, on the other hand, would be effective restraints, but statistical evidence of the application of such measures is lacking. In fact, the history of consumer financing is one of almost uninterrupted increasing length of maturities and decreasing size of down-payments.

By the consumer's relative insensitiveness to higher interest rates the lender is able to pass on to the consumer whatever increase he himself faces in the cost of money. But the lender does not rely solely on this ability. In addition, finance companies usually have first-rate credit records and thus enjoy considerable protection against demands of tighter borrowing costs. Similarly, their profitability provides at least a temporary cushion, and they usually have idle credit lines which afford them a shelter when credit becomes more stringent. They thus have several lines of defence against credit stringency.

The mechanism through which tightening credit conditions eventually does affect consumer lending on the wholesale level is a complex of elements, such as anticipation of losses, the closer

scrutiny of accounts, the less liberal treatment of contracts not conforming to standard conditions, the concern of lenders with maintaining satisfactory ratios of equity to debt and of different kinds of debt to one another, etc. The net result of these considerations are greater selectivity on the part of lenders and even the elimination of marginal lenders and borrowers, normally reinforced by a relaxation of demand stemming from the same economic causes which create credit tightness. Thus general credit shortage reaches the consumer lending market.

Unfortunately, during recent periods of tightening credit, pressure from the demand side has been so insistent as to make it practically impossible to observe, as one would in a laboratory, the effects of tightening credit, and there remains a larger share of deductive reasoning rather than statistical inference in the above considerations than one would wish for. "Unavoidably an important question must remain unanswered. That question is whether the response of the consumer instalment credit area as a whole to changes in credit conditions, and in particular to general monetary restraint, is sufficient either in degree or in timing to facilitate a national economic policy directed toward high and rising levels of activity without inflation". Thus the study concludes the chapter dealing with the relationship between consumer instalment credit and the credit market.

Much stronger evidence of the unstabilizing nature of consumer instalment credit would have been required to make a plausible case in favor of governmental credit restrictions, and while the Council of Economic Advisers has not reacted to the Survey, it is unreasonable to expect it to draw any but negative conclusions from the Board's study. Nonetheless, an enterprise of such magnitude cannot help but focus increased attention on the existence of the problem. A greater awareness of the financial balance sheet of the American consumer is a useful development. It may in itself tend to dampen any excesses in consumer financing.

Washington, D. C. HANS H. LANDSBERG

BANCA NAZIONALE DEL LAVORO

HEAD OFFICE: ROME

VIA VITTORIO VENETO, 119

Condensed Statement of Condition, December 31, 1957

ASSETS	(Million lire)	LIABILITIES	
Cash, Balances with Bank of Italy & Money at call	220,314.4	Capital	1,150.0
Treasury Bills	19,281.5	Ordinary Reserve Fund	9,540.0
Govt. or Govt.-guaranteed Securities	84,336.3	Staff Retirement Fund & Provident Fund	17,460.9
Other Securities	12,180.6	Deposit & Current Accounts	625,391.9
Bills discounted	226,472.1	Correspondents	71.751.2
Advances and Loans	286,446.9	Foreign currency accounts	37,508.4
Contangoes	9,905.1	Circular cheques (*assegni circolari*)	23,001.9
Due from Correspondents	28,717.5	Advances taken	27.9
Customers' liabilities for guarantees, Acceptances, etc.	92,951.5	Bills for collection	39,348.1
Miscellaneous accounts	4,870.2	Guarantees, Acceptances, etc.	92,951.6
Participations	—	Miscellaneous accounts	62,680.8
Premises, Furniture and Equipment	—	Unearned discount, etc.	3,637.2
		Net profit	1,026.2
Total	985,476.1	*Total*	985,476.1
Securities deposited by third parties	306,336.8	Depositors of securities	306,336.8
Special guaranteed accounts	9.3	Blocked accounts guaranteeing special accounts	9.3
Staff Retirement Fund & Provident Fund: Bank's securities deposited as guarentee	17,889.2	Bank's securities guaranteeing Staff Retirement Fund & Provident Fund	17,889.2
	1,309,711.4		1,309,711.4

AUTONOMOUS SECTIONS FOR SPECIAL CREDITS

SECTION FOR CREDIT TO MEDIUM AND MINOR INDUSTRIES

Capital, Reserves and Government Guarantee Fund L. 3,042,750,000

SECTION FOR HOTEL AND TOURIST CREDIT

Aggregate Capital and Reserves L. 954,483,593

SECTION FOR CO-OPERATIVE CREDIT

Capital and Reserves L. 2,710,692,911 - Government Guarantee L. 2,000,000,000

SECTION FOR MORTGAGE CREDIT

Aggregate Capital and Reserves L. 2,775,500,496

SECTION FOR CINEMA CREDIT

Aggregate Capital and Reserves L. 1,033,650,957

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